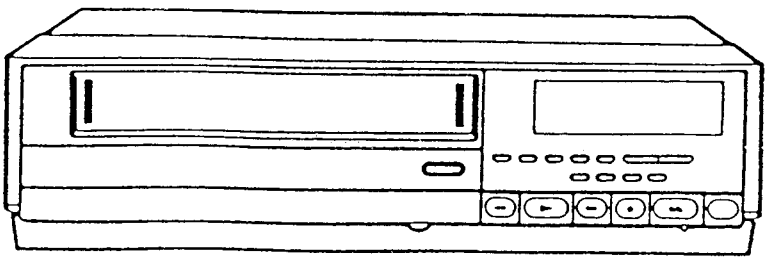
ORION VHS

PAL

Video Cassette Recorder

HQ HIGH QUALITY PICTURE

VH-1070RC



MHR'S Version:

MHR'S VERSION A

3331

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or disuse may cause transformation and aging of rubber parts.

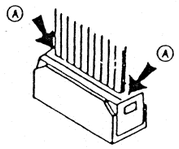
Parts Name \ Time	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Head, Full Erase	□	□	□	□	□	Clean those parts in contact with the tape.
Head, Audio Control	□	□	□	□	□	
Belt, Loading		□		○		Clean the rubber, and parts which the rubber touches.
Belt, Reel		□		○		
Pinch Roller	□	□	□	□	□○	
Capstan DD Unit					○	
Motor, Loading					○	
Tension Band Ass'y					○	
Capstan Shaft	□	□	□	□	□	
Impedance Roller	□	□	□	□	□	Replace when rolling becomes abnormal.
Tape Running Guide Post	□	□	□	□	□	
Unit, Cylinder	□	□○	□	□○	□○	■

○ : Replace
□ : Clean

■ Clean the upper drum (especially the video heads) in the direction of drum rotation using a thick, textured cloth with a high quality methyl alcohol. Avoid wiping vertically as this may cause damage to the video heads.

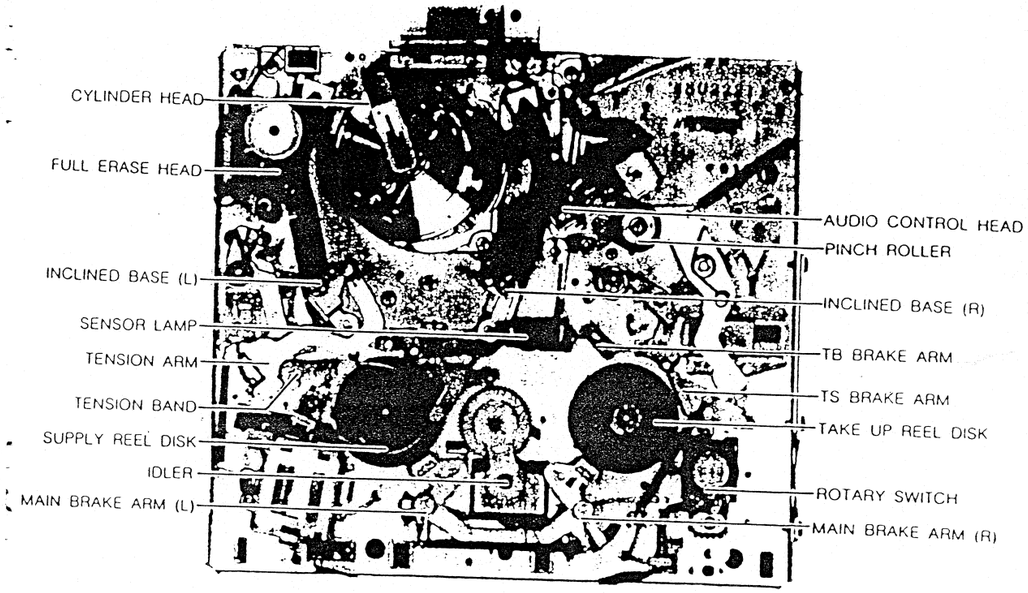
HOW TO REMOVE AND INSTALL RIBBON WIRE IN CASE OF DISCONNECTION.

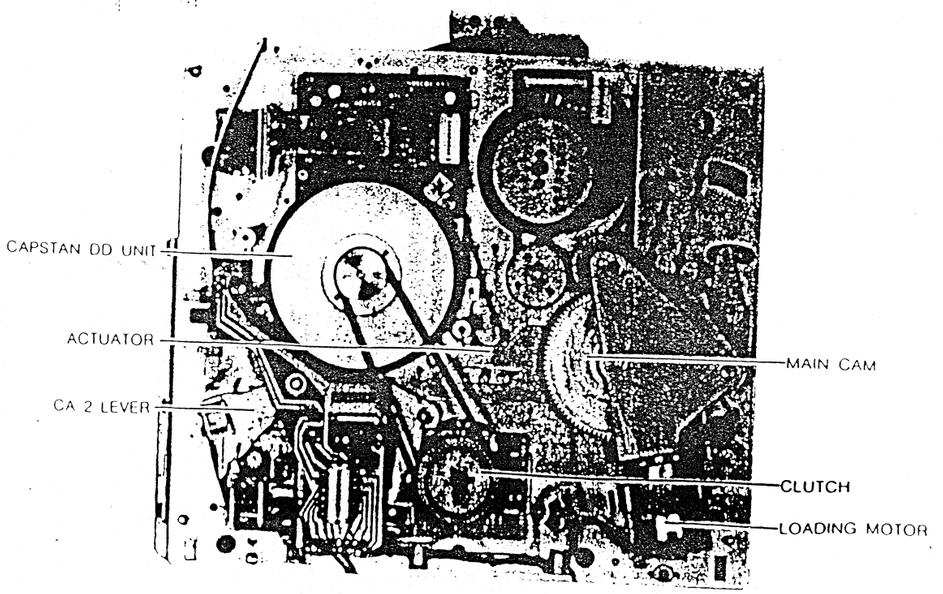
a. To remove the wire, simultaneously press both parts indicated by arrow Ⓐ.
b. To install the wire, do not press the parts indicated by arrow Ⓐ, but insert the wire into the connector.



CONNECTOR

DECK PARTS LOCATION





● PRECAUTION

○ Remove the following items before adjusting the Deck and starting work.

1. Top Cabinet (2 screws)
2. Bottom Plate (5 screws)
3. Front Panel
4. Stage
   (Refer to STAGE REMOVAL AND INSTALLATION)

Carefully read each item in ●NOTE sections before starting work.

To operate Deck with stage removed from the unit.

* Short the Cassette In Switch Terminal with the Deck Chassis.
* Place an object which weighs between 350g and 500g on the Video Tape to keep it steady while using the Video Cassette Tape. (Do not place an object which weighs over 500g.)

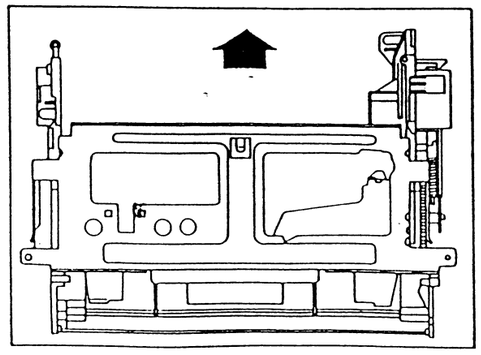
HOW TO REMOVE AND INSTALL STAGE

● REMOVAL

1. Disconnect the eight pin connector (CP1001), which has been connected to the stage PCB, from the system control PCB.
2. Remove 2 screws held to inside panel.
3. Remove 2 screws (Tapping (Bo) 3x10) while stage is locked when power switch is OFF.
4. Push the stage toward arrow mark, and lift up to remove the stage.

● NOTE

1. When you remove and install the stage, be careful not to touch guide pin or cylinder head.
2. Be careful not to break connectors or cut leads.



INSTALLATION

1. Set the stage and hold with the 2 screws (Tapping (Bo) 3x10).
2. Attach 2 screws to inside panel.
3. Connect the eight pin connector(CP1001), which comes from stage, to system control PCB.

● NOTE AFTER INSTALLATION

1. Check the following:

   a. The Front Loading Operation works well when turning on the power and when inserting a cassette pack into the stage.
   b. It begins play mode after Play Button is pushed.
   c. It begins recording mode after Recording Button is pushed.
   d. It ejects after Eject Button is pushed.

● NOTE

1. Under this operation system, the end sensor and the start sensor are opened, so the auto rewind at the end of the tape will not work.
2. When you want to make a tape run without the stage, set an object which weighs approximately 500g on the tape.

■ A-1: REPLACEMENT OF REEL DISK AND CONFIRMATION OF ITS HEIGHT

● REMOVAL

(Supply Reel Disk)

1. Remove the SS Brake Spring from the Loading Base.
2. Remove the SS Brake.
3. Remove the tension band.
4. Remove the polyslider washer ①.
5. Separate the mechanical brake from the reel disk.
6. Pull the supply reel disk ③ upward and replace it.

(Take-up Reel Disk)

1. Remove the TB Brake.
2. Remove the polyslider washer ①.
3. Separate the mechanical brake from the reel disk.
4. Pull the take-up reel disk ④ upward and replace it.

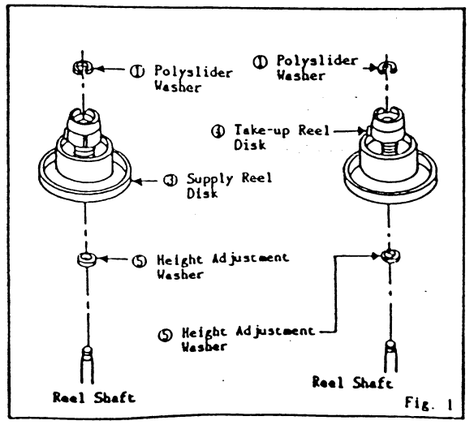


Fig. 1

METHODS OF ADJUSTMENT AND REPLACEMENT

● INSTALLATION

(Supply Reel Disk)

1. Clean the reel disk shaft and put in height adjusting washer ⑤.
2. Install new supply reel disk.
3. Make height adjustment of the reel disk using the master plane (JG022) and the reel table height chip (JG024).
4. Pull out the new supply reel disk. After oiling (Cosmo Oil Hydro HV100) the reel disk shaft, hold the new supply reel disk again.
5. Install the polyslider washer ①.
6. Install the tension band.
7. Install the SS Brake in the chassis.
8. Install the Spring in the Loading Base.

(Take-up Reel Disk)

1. Clean the reel disk shaft and put in height adjusting washer ⑤.
2. Install new take-up reel disk.
3. Make height adjustment of the reel disk using the master plane (JG022) and the reel table height chip (JG024).
4. Pull out the new reel take-up disk. After oiling (Cosmo Oil Hydro HV100) the reel disk shaft, hold the new take-up reel support again.
5. Install the polyslider washer ①.
6. Install the take-up side (TS) Brake.

● NOTE

1. Make height adjustment of the reel disk after replacement.
2. Be careful not to damage the tension band at the time of removal and installation.
3. Be careful not to damage the TS Brake.
4. Be careful not to scratch the reel disk shaft with the polyslider washer or tool at the time of removal and installation.
5. After installation adjust the tension post position and the tape tension when playing back in accordance with ■A-7.
6. Refer to ■A-2 for reel disk height adjustment.

■ A-2: HEIGHT CONFIRMATION AND ADJUSTMENT

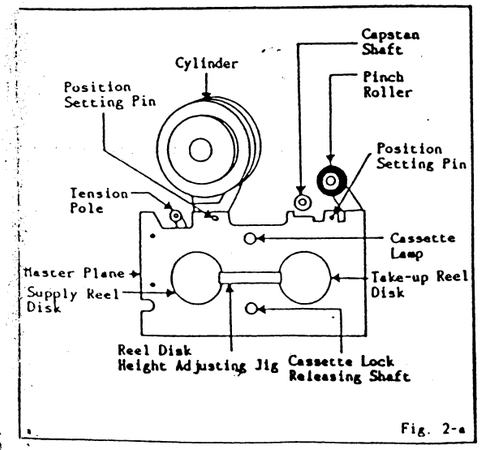


Fig. 2-a

● ADJUSTMENT

1. Set the master plane (JG022) at mechanism framework, taking care not to scratch the drum, as shown in Fig. 2-a.
2. Confirm that the master plane (JG022) sits between A and B, as shown in Fig. 2-b, using the reel table height chip (JG024). In case it is beyond the range of set-up value, adjust it by the height adjusting washer, making up-down play within 0.1~0.5mm.

● NOTE

1. Use same thickness adjustment washer (REF#521) as found in unit.

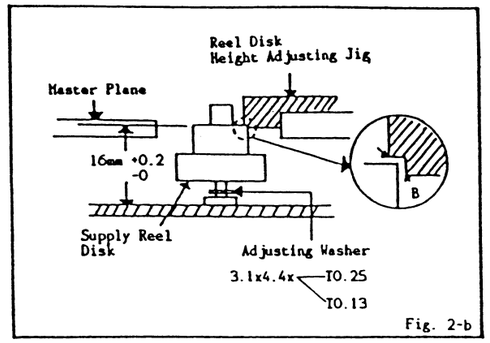


Fig. 2-b

NOTE: Refer to the table below for possible cause of problems when confirmation cannot be made for the indicated items.

CONFIRMATION ITEM	CHECK POINT (REPLACEMENT)
A-3 A-4 A-5 A-7	Capstan belt may be stretched. Clutch may be worn out (if so, change reel disk.) Idler ASS'Y may be worn out.
A-6 A-8	Tension band may be worn out.
A-15	Main brake belt may be worn out.

LIST OF CONFIRMATION ITEM:
A-3 Fast forward and its take-up torque confirmation
A-4 Rewind and its take-up torque confirmation
A-5 Record take-up torque confirmation
A-6 Confirmation of fast forward back tension
A-7 Confirmation of rewind
A-8 Confirmation of search/cue back tension
A-15 Confirmation of reel brake torque

■ A-3: CONFIRMATION OF FAST FORWARD AND ITS TAKE-UP TORQUE

● CONFIRMATION

1. Set torque gauge (JG002D) on take-up reel disk, and place unit in fast forward mode.
2. Confirm that torque is more than 800g.cm.

● NOTE

1. After setting the torque gauge (JG002D) on the reel disk, hold the gauge in place. Push the Fast Forward Button and the reel disk will begin to turn.
2. Carry out this confirmation and adjustment without using a video cassette tape.

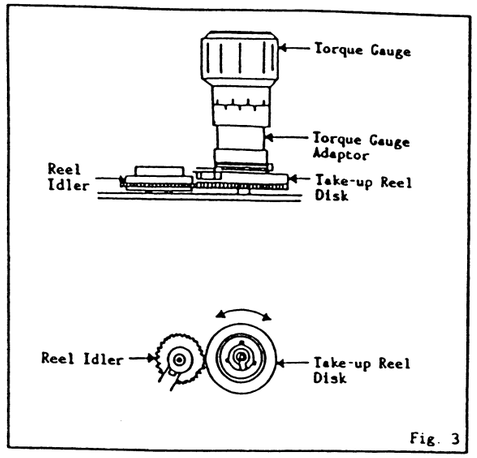


Fig. 3

■ A-4: CONFIRMATION OF REWIND AND ITS TAKE-UP TORQUE

● CONFIRMATION

1. Set the torque gauge (JG002D) on the supply reel disk, and place the unit in rewinding mode.
2. Confirm that torque is more than 800g.cm.

● NOTE

1. Hold the torque gauge (JG002D) in place when you push the Rewind Button. The reel disk will begin to turn, after setting the torque gauge (JG002D) on the reel disk.
2. Carry out this confirmation and adjustment without using a video cassette tape.

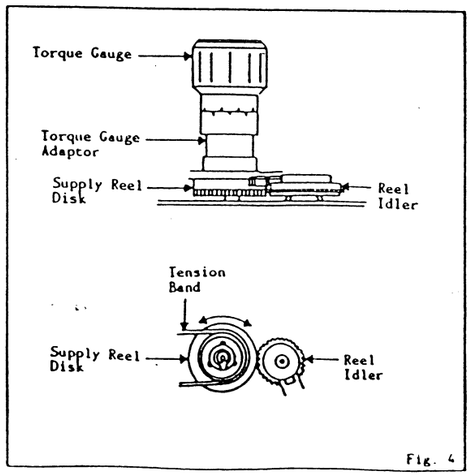


Fig. 4

■ A-5: CONFIRMATION OF RECORDING TAKE-UP TORQUE

● CONFIRMATION

1. Set the torque gauge (JG027) on the rewind reel disk, then check REC mode.
2. Make sure that the torque covers the range, 100~230g.cm.

■ A-6: CONFIRMATION OF FAST FORWARD BACK TENSION

● CONFIRMATION

1. Set the unit in the fast forward mode by pushing Fast Forward Button.
2. Put the torque gauge (JG002E) on the supply reel disk and make slow right turn (one turn in a few seconds). Confirm the torque is within set-up value (15~35g.cm).

● NOTE

1. Put the torque gauge (JG002E) on the reel disk steadily and measure.

■ A-7: CONFIRMATION OF REWIND

● CONFIRMATION

1. Set the unit in the rewind mode by pushing Rewind Button.
2. Put the torque gauge (JG002E) on the take-up reel disk and make slow left turn (one turn in a few seconds) and confirm the torque is within set value (30~60g.cm).

● NOTE

Put the torque gauge (JG002E) on the reel disk steadily and measure.

■ A-8: CONFIRMATION OF SEARCH/CUE BACK TENSION

● CONFIRMATION

1. Set the unit in the play mode by pushing Play Button.
2. Push Search Cue Button and the unit will be in the search cue mode. Confirm SS brake is working on the supply reel disk.
3. Put the torque gauge (JG002E) on the supply reel disk and make slow right turn (one turn in a few seconds). Measure torque and confirm it satisfies set-up point (above 90g.cm).

● NOTE

1. After positioning the tension arm, conduct confirmation and adjustment of visual search cue back tension.
2. Put the torque gauge (JG002E) on the reel disk steadily and measure. If the torque gauge is moving, a correct measurement cannot be accomplished.

■ A-9, 10, 11: NOT REQUIRED FOR THIS MODEL

METHODS OF ADJUSTMENT AND REPLACEMENT

■ A-12: CONFIRMATION AND ADJUSTMENT OF TENSION POLE POSITION

● CONFIRMATION

1. Load a E-180 tape, and press the PLAY button to set the playback mode.
2. As soon as the guide rollers, L, R begin to draw the tape from the cassette, the tension pole shall move to the left, thus loading will start. Confirm tension pole position at this stage.
3. When the tape (E-180) is near the beginning, confirm by eye that the center of the tension pole is positioned 4.5~6.5mm to the left from center of P1 post. (Fig. 12-a)
4. Confirm that the video tape is not curling at the flange of P1 post or is not running on flanges.

● POSITIONING

1. In case tension pole is positioned to the left of P1 post center by less than 4.5mm, move tension band adjustment angle ① in the direction of arrow B (Fig. 12-b), then the screw ② shall be tightened.
2. In case tension pole is positioned on the left of P1 post center by more than 6.5mm, move tension band adjustment angle ① in the direction of arrow A (Fig. 12-b), then the screw ② shall be tightened.

● NOTE

1. After completion of positioning, do not forget to fix the position with paint.
2. Do not overtighten the screw, otherwise the threads may be damaged.

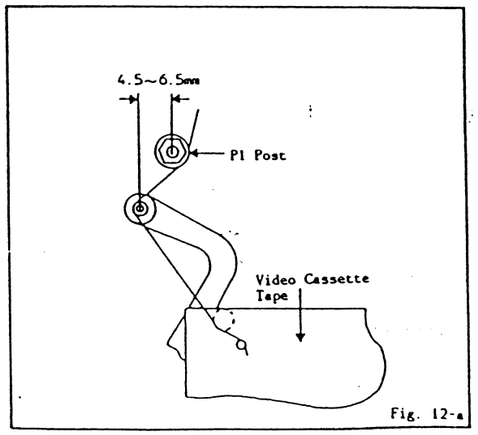


Fig. 12-a

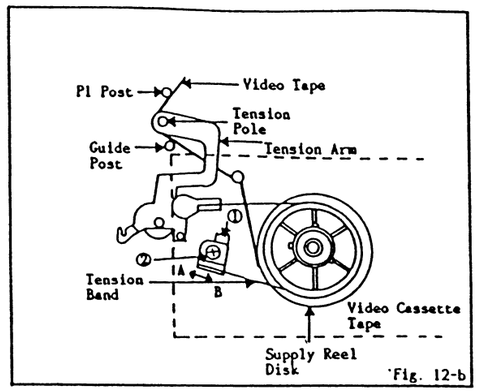


Fig. 12-b

■ A-13: NOT REQUIRED FOR THIS MODEL

■ A-14: CONFIRMATION AND ADJUSTMENT OF BACK TENSION ON RECORDING AND PLAYBACK

● CONFIRMATION

○ When you use a back tension measuring cassette.
1. Set the measuring cassette tape.
2. Set the unit in the recording mode. At this time, confirm, by the pointer of the measuring cassette tape, that the back tension is within set-up points (20~50g.cm).
3. Confirm the video tape is tightly running on the fixed guide.
4. At the beginning and ending of the tape, confirm there is no sag or damage on edges of the tape.

○ When you use tentelometer.
1. Set E-180 cassette tape to the beginning.
2. Set the unit in the recording mode.
3. Pull Impedance roller toward arrow A as in Fig. 14-a and set the tentelometer as in Fig. 14-a, 14-b confirming the tape tension is within set-up points (23~30g).
4. Confirm the video tape is running tight on P1 post.
5. Confirm there is no sag or damage on edges of the tape both at the beginning and end of the tape.

● ADJUSTMENT

1. In case the tape tension is weaker than 23g, adjust the tension plate on arrow A side of Fig. 14-c and re-confirm the tension.
2. In case the tape tension is stronger than 30g, adjust the tension plate on arrow B side of Fig. 14-c and re-confirm the tension. (Use adjusting screwdriver, JG032)

● NOTE

1. The tentelometer should not touch F/E Head, drum or other components in the tape path.
2. When you use the back tension measuring cassette, it is recommended to also use a tentelometer for confirmation.
3. Use lock paint after adjustment.
4. Do not overtighten the screw, as threads may be damaged.

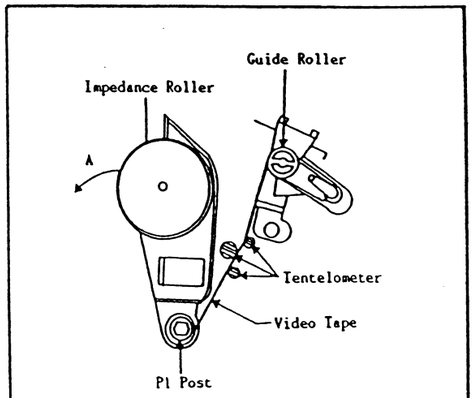


Fig. 14-a

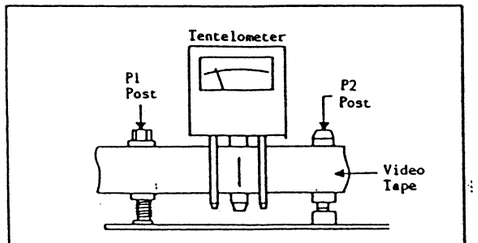


Fig. 14-b

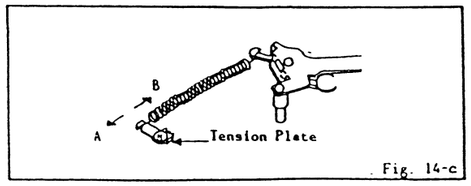


Fig. 14-c

■ A-15: CONFIRMATION OF REEL BRAKE TORQUE

■ A-15-1: Confirmation of take-up reel brake

● CONFIRMATION

1. Set the stop mode.
2. Set the torque gauge (JG002G) to the take-up reel and turn it counter-clockwise. Confirm that the brake torque is more than 250g.cm. Refer to Fig. 15-a.

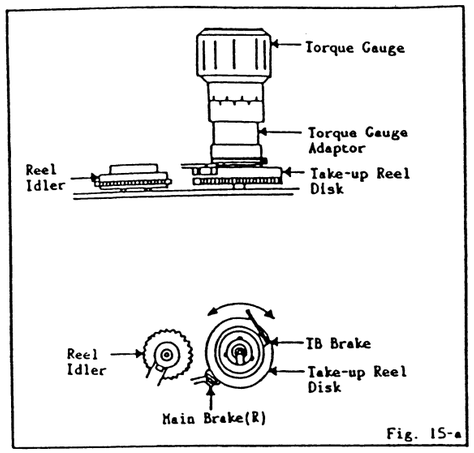


Fig. 15-a

■ A-15-2: Confirmation of supply reel brake

● CONFIRMATION

1. Set the stop mode.
2. Set the torque gauge (JG002G) to the supply reel and turn it clockwise. Confirm that the brake torque is more than 250g.cm. Refer to Fig. 15-b.

● NOTE

1. Separate the idler from the reel and confirm the brake torque.

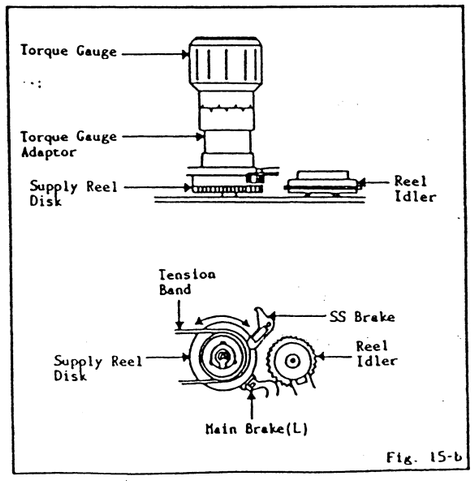


Fig. 15-b

■ A-16: CONFIRMATION AND ADJUSTMENT FOR THE HEIGHT OF P1 POST, P4 POST, LIMITER POST

● CONFIRMATION

1. Confirm that when tape is running there is no crease or bend on the tape edge at the places shown in Fig. 16-a.

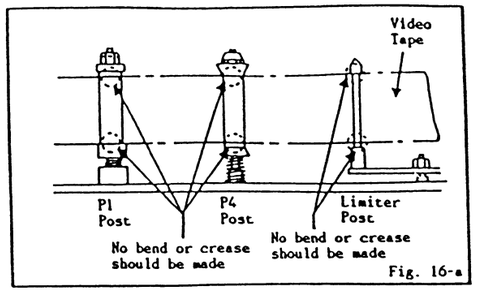


Fig. 16-a

■ A-16-1: Confirmation and adjustment for the height of P1 post

● ADJUSTMENT

1. Set the master plane (JG022) to the Deck.
2. Put the Post Adjustment Tip (JG026) on the master plane (JG022), adjust the height by sliding the 'A' part of Post Adjustment Tip (JG026) to the "a" direction of the master plane (JG022). Refer to Fig. 16-b, c.

■ A-16-2: Confirmation and adjustment for the height of P4 post.

● ADJUSTMENT

1. Set the master plane (JG022) to the Deck.
2. Put the Post Adjustment Tip (JG026) on the master plane (JG022), adjust the height by sliding the 'A' part of Post Adjustment Tip (JG026) to the "b" direction of the master plane (JG022). Refer to Fig. 16-b, c.

■ A-16-3: Confirmation and adjustment for the height of limiter post

● ADJUSTMENT

1. Set the master plane (JG022) to the Deck.
2. Put the Post Adjustment Tip (JG026) on the master plane (JG022), adjust the height by sliding the 'A' part of Post Adjustment Tip (JG026) to the "c" direction of the master plane (JG022). Refer to Fig. 16-b, c.

● NOTE

1. The following adjustment must be carried out only when the height is not correct.
2. After adjustment, check the running condition with a video tape.
3. After completion of adjustment, carry out tape running adjustment. After adjusting the guide roller (L, R), check as shown in Fig. 16-a.
4. Do not move the nut after completion of adjustment.
5. After completing the adjustment, always fix P1 post and the guide roller with a lock screw.

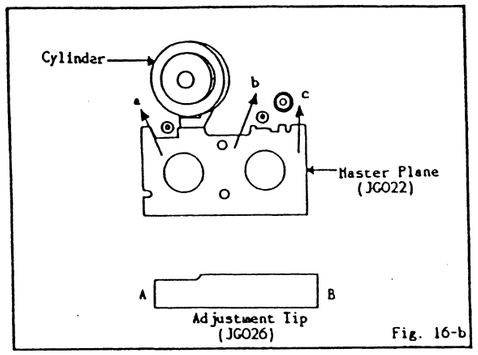


Fig. 16-b

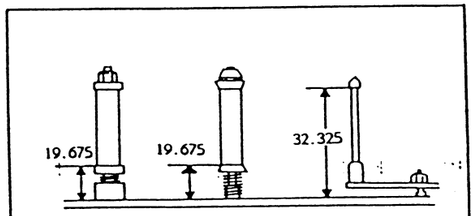


Fig. 16-c

■ A-17: REPLACEMENT OF A/C HEAD

● REPLACEMENT

1. Remove solder from the lead wires placed on A/C Head P.C.Board, and take the lead wires away from P.C.Board.
2. Loosen SET SCREW ③ using phillips screwdriver (Fig. 17-a)
3. Remove screw ④ using phillips screwdriver.
4. Remove A/C Head screw ⑤ using phillips screwdriver. Carefully do this, because there is a spring between the plate and A/C Head screw.

● NOTE

1. After completion of replacement, do not fail to carry out the tape running adjustment. Do not touch heads by any means when replacing A/C Head.

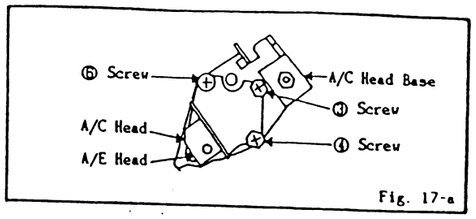


Fig. 17-a

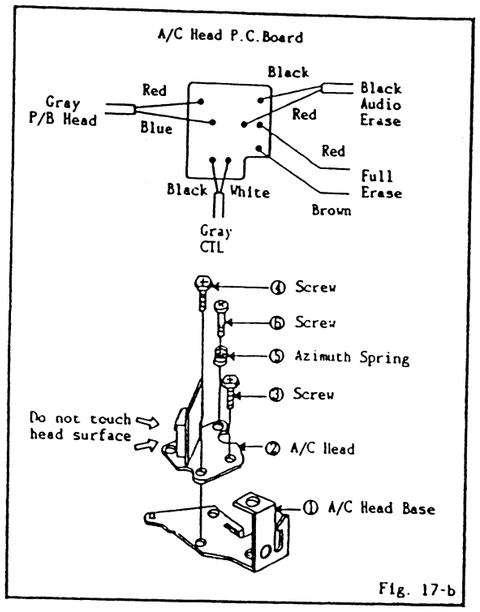


Fig. 17-b

■A-18: CONFIRMATION AND ADJUSTMENT OF A/C HEAD HEIGHT AND TILT

● CONFIRMATION

1. Set the unit in the play mode using a E-180 tape.
2. Confirm that the tape is not curling on flange of guide post.
3. Confirm that the height and tilt of A/C Head against the tape are as per Fig. 18.

● ADJUSTMENT

In case tape is running abnormally, make the following adjustments (Fig. 17-a and 18).

1. Check the tape running condition with the unit in the play mode using the E-180 tape.
2. Confirm tape runs smoothly without any crease or bend between the guide post and guide roller R.
3. It is absolutely impossible to get satisfactory sound if the tape is distorted between A/C Head and guide post. So confirm there is no crease on the tape.
4. If tape still does not run smoothly adjust it by turning screw ③ slowly.
   NOTE: Do not move guide post.
5. Height of A/C Head against the tape should be as per Fig. 18.

If a tape runs smoothly around A/C Head and rough adjustment of height is done, carry out the height and azimuth adjustment of A/C Head using linear tape (JG001).

1. Playback audio tone 6KHz (picture is B/W Pattern) linear tape (JG001) and observe the waveform at Audio output terminal with oscilloscope.
2. Turn SET SCREW ④ slowly until maximum level is achieved. If maximum level cannot be maintained set screws where level variation is the smallest. (Fig. 17-a)
3. Re-check the tape running adjustment. (■A-19)

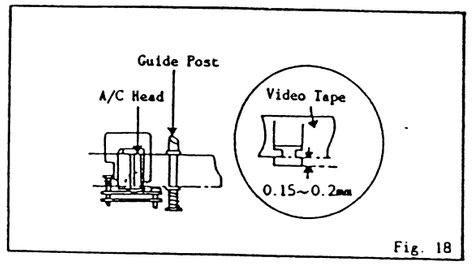


Fig. 18

■A-19: TAPE RUNNING ADJUSTMENT

● ADJUSTMENT

1. Carry out the reel disk height adjustment using master plane (JG022) and reel table height chip (JG024).
2. Carry out the height confirmation and adjustment of P1 post and the post adjustment chip jig (JG026) in accordance with paragraph ■A-16.
3. In accordance with ■A-12, carry out the positioning and confirm tension pole position with the post adjustment chip jig (JG026).
4. Playback the rough adjustment tape and make a rough adjustment of guide roller height with the tool (JG021) according to ■A-21. Then, match lower edge of tape to drum lead and make sure that the video tape does not curl on flange of the guide post.
5. In accordance with ■A-21, play the linear tape and adjust the guide roller height so that the envelope becomes flat and that flatness will not be affected even when the tracking control knob is turned.
6. In accordance with ■A-18, adjust A/C Head height, tilt and azimuth.
7. Position the tracking control knob at preset and turn adjusting nut X a little as in Fig. 17-a so that envelope becomes maximum. Adjust position of A/C Head.
8. To confirm the flatness of envelope and voice recording, use the output from an appropriate test signal.
9. After completion of adjustment, fix each adjustment screw and nut etc.

■A-20: REPLACEMENT OF UPPER DRUM

● REPLACEMENT

1. Remove the screw ⑥ which holds the EARTH BRUSH ⑤.
2. Disconnect the lead wires ① (two, yellow).
3. Disconnect the lead wire ② (one, red).
4. Disconnect the lead wire ③ (one, brown).
5. Remove the two holding screws with the flat washers ④ using a phillips screwdriver.
6. Pull out the upper drum in such a way that it will not incline upward and carefully replace in order not to scratch disk.

● INSTALLATION

1. Set up a new drum as per Fig. 20 and correctly place each lead wire.
2. Set upper drum by installing two screws ④.
3. Solder lead wires ①, ② and ③ to their respective positions.
4. Install the EARTH BRUSH ⑤ with the screw ⑥.

● NOTE

1. Fitting clearance between the disk outer diameter and the drum inner diameter is made in micron order. Scratches and dust can make them hard to fit or separate and can adversely affect fitness of the drum and disk. Pay attention.
2. Do not touch the head on drum surface directly.
3. Do not apply excessive pressure to screwdriver.
4. If you don't have the tool (JG031), use gloves.
5. Connect yellow and brown leads and red and yellow leads.
6. Before installing, confirm that there are no scratches or dust on the disk front and surface.
7. Before installing, confirm that there are no scratches on the disk and upper drum assembly.
8. When setting, take care not to let any dust or dirt go into the clearance between disk and upper drum.
9. Turn holding screws slowly and carefully.
10. After completion of replacement, do not forget to carry out tape running adjustment and do the following electrical adjustments and confirmations.

a. ■E-4: P.G. Shifter Adjustment
b. ■E-6: Tracking Fix Adjustment
c. ■E-18: Playback Luminance Level Adjustment
d. ■A-21: Guide Roller Adjustment

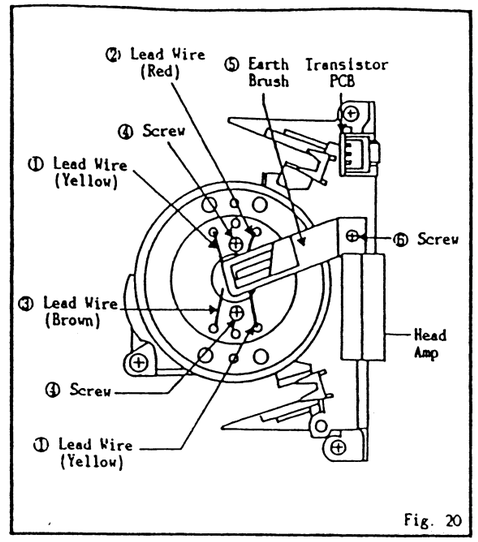


Fig. 20

■A-21: ADJUSTMENT OF GUIDE ROLLER

● ADJUSTMENT

1. Insert a linear tape into stage.
2. Switch on main power and then connect monitor output cord and video input cord to their proper positions.
3. Connect CH-1 and CH-2 of oscilloscope to envelope output and to the test point of switching pulse, respectively.
4. Carry out this adjustment in playback mode.
5. Trigger with SW pulse and observe the envelope. (Fig. 21-a)
6. Observe the envelope, adjust the guide roller height and let tape run on drum head. (Use the adjustment screw driver JG005). If a video tape is running above or below helical lead position, waveform shall appear as in Fig. 21-b and 21-c.
7. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control knob is turned. (Use the adjustment screw driver JG005).
8. When the tracking control knob is turned, adjust the envelope so that its A:B ratio is better than 10:7 where the waveform starts to reduce at 'A'. (Fig. 21-d)
9. Make adjustment of ■E-4 P.G. shifter point as per play SW point of electrical adjustment.
10. Record the color bar and playback, to confirm the envelope is flat.
11. After that, carry out confirmation of the envelope.

● NOTE

If the guide roller adjustment does not produce a satisfactory result, refer to the adjustment section in ■A-18.

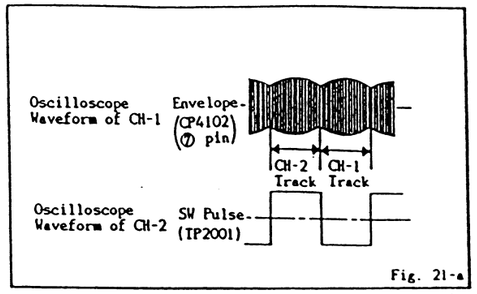


Fig. 21-a

a: Envelope waveform will be as shown in Fig. 21-b when a video tape is above the helical lead position.

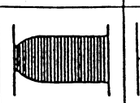
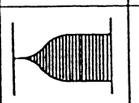
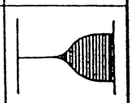
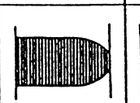
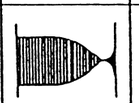
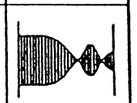
Float	Little	Medium	Too Much
Supply Side (Drum Beginning)			
Take-up Side (Drum Ending)			

Fig. 21-b

b: Envelope waveform will be as shown in Fig. 21-c when a video tape is lower than helical lead position.

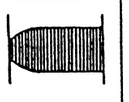
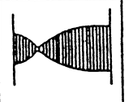
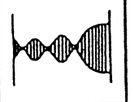
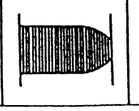
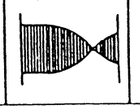
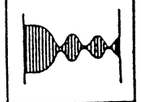
Shift	Little	Medium	Too Much
Supply Side (Drum Beginning)			
Take-up Side (Drum Ending)			

Fig. 21-c

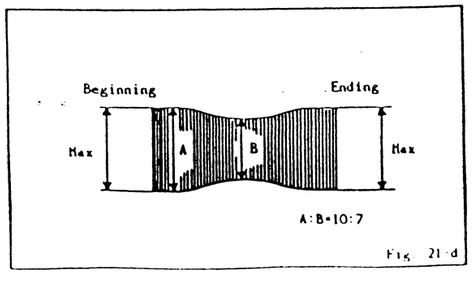


Fig. 21-d

■ A-22~25: NOT REQUIRED FOR THIS MODEL

■ A-26: REPLACEMENT OF CYLINDER UNIT

● REMOVAL

1. Remove the shield plate on the Head Amp and remove the screw ③ to disconnect the solder for the heater lead.
2. Remove the transistor PCB according to item ■ A-39.
3. Remove the screw ④ which holds the EARTH BRUSH ⑤.
4. Remove the cylinder unit by taking out the screws ① and ② . (Fig. 26)

● INSTALLATION

1. Install a new cylinder unit in reverse steps of REMOVAL.
2. Install the transistor PCB according to item ■ A-39.
3. Install the Head Amp with the screw ③ again.

● NOTE

1. Do not touch the surface of the cylinder head.
2. Make sure ■ A-20 was done properly.

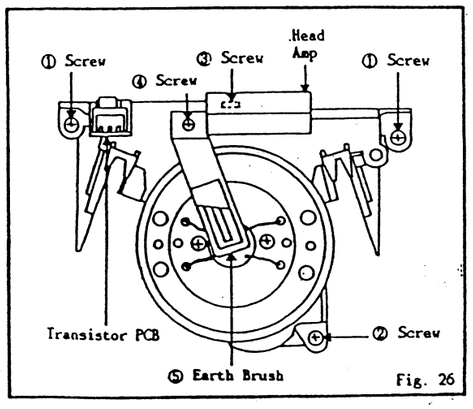


Fig. 26

■ A-27: REPLACEMENT OF TENSION BAND ASS'Y

● REMOVAL

1. Remove the screw ① held to the tension band.
2. Release the SS brake from the tension band to remove it from the Supply Reel Disk. (Fig. 27)
3. Remove the tension band from the tension arm.

● INSTALLATION

Install a new cylinder unit in reverse steps of REMOVAL.

● NOTE

1. The tension band should not be twisted during installation.
2. Adjust the placement of the tension post according to item ■ A-12.
3. After adjustment of the above two items, adjust it according to item ■ A-14.

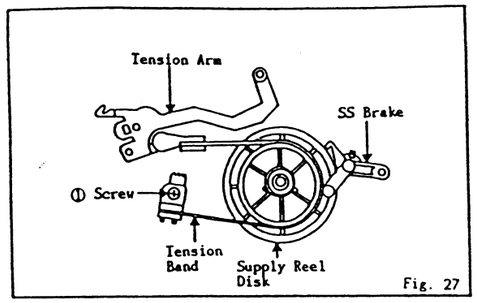


Fig. 27

■ A-28~33: NOT REQUIRED FOR THIS THIS MODEL

■ A-34: REPLACEMENT OF LOADING BELT

● REMOVAL

1. Remove the screw ① held to the FS Gear Plate.
2. Remove the FS Gear Plate, the Polyslider Washer ② and the Fan Shaped Gear. (Fig. 34-a)
3. Remove the 2 pieces of stoppers ④, then pull the hook ③ in the direction of the arrow to remove the Loading Motor. (Fig. 34-b)
4. Remove the Loading Belt from the Loading Motor.
5. Move the Tension Lever 1 to the dotted line. (Fig. 34-a)
6. Remove the Main Cam.
7. Remove the Worm Ass'y and replace Loading Belt with new one.

● INSTALLATION

1. Hang a new Loading Belt on the pulley of the Worm Ass'y, then hang it on the pulley of the Loading Motor.
2. First, attach the Loading Motor, next fix the Worm Ass'y.
3. Install the Main Cam.
4. Install the Tension Lever 1.
5. Install the Fan Shaped Gear.
6. Install the FS Gear Plate, then hold the screw ①.

● NOTE

1. Clean the pulley when replacing Loading Belt.
2. Exchange it in stop mode.
3. Avoid getting grease on the Loading Belt.
4. Do not misalign the points (A, D, E) of the Main Cam, the Tension Lever 1 and the Fan Shaped Gear. (Fig. 34-a, b, c)
5. Make sure that A point is within B range in holding of the Main Cam. (Fig. 34-c)
6. Make sure that D part is within C part in holding of the Tension Lever 1. (Fig. 34-a, c)
   Make sure that E part is within C part in holding of the Fan Shaped Gear. (Fig. 34-a, c)

● CHECK AFTER INSTALLATION

1. Check if strange sound is heard in play mode.
2. Check if P2 post and P3 post are fitted to the post stopper.
3. Check if P2 post and P3 post are completely returned in stop mode.

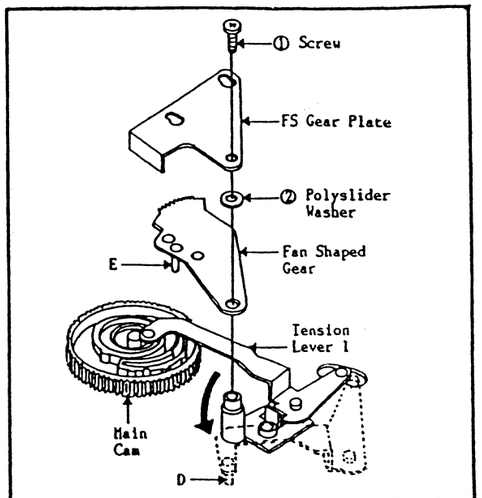


Fig. 34-a

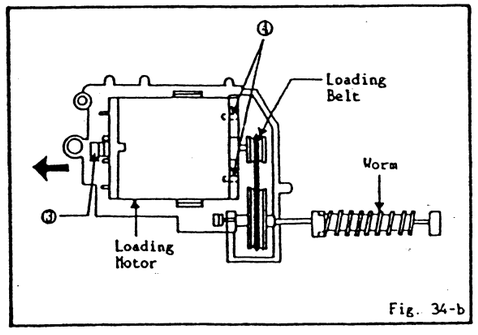


Fig. 34-b

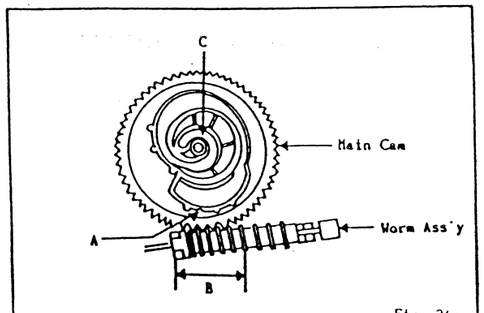


Fig. 34-c

■ A-35: NOT REQUIRED FOR THIS MODEL

■ A-36: REPLACEMENT OF PINCH ROLLER

● REMOVAL

1. Remove the screw ①. (Fig. 36)
2. Remove the Pinch Roller.

● INSTALLATION

Install a new Pinch Roller in reverse order of REMOVAL.

● NOTE

1. Be careful of bending the Pinch Roller Arm in removal and installation.
2. Do not touch around the Pinch Roller.

● CHECK AFTER INSTALLATION

Check if the tape is running normally in PLAY mode.

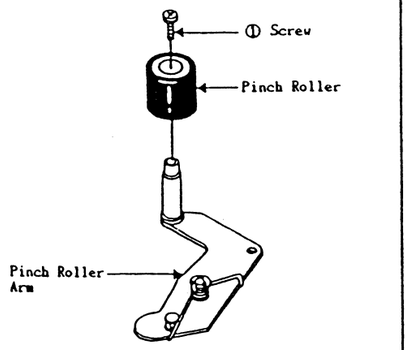


Fig. 36

■ A-37: REPLACEMENT OF DD UNIT

● REMOVAL

1. Remove the Deck unit from the Inside Cabinet.
2. Remove the 3 screws ① (SEMS A 2.6x6) held to DD unit on front of the Deck. (Fig. 37)
3. Turn the Deck over, then remove the Reel Belt from the clutch pulley.
4. Remove the DD unit slowly from rear side of the Deck.

● INSTALLATION

1. Return the Limiter Post to the dotted line, then fit new DD unit to the chassis without touching center of the shaft of the DD unit to the chassis. Return the Limiter Post to where it was. (Fig. 37)
2. Install the clutch pulley without twisting the Reel Belt.

● NOTE

1. Do not bend the Limiter Post.
2. Use the specified screw held to the DD unit.
3. Tighten the screws completely.

● CHECK AFTER INSTALLATION

1. Check if tape running is normal in PLAY mode.
2. Check if FF/REW mode works normally.

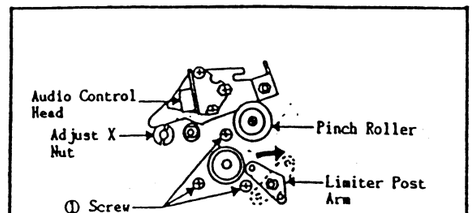


Fig. 37

■ A-38: REPLACEMENT OF LOADING MOTOR

● REMOVAL

1. Remove the 2 stoppers ④, then pull the hook ③ in the direction of the arrow to take off the Loading Motor. (Fig. 34-b)
2. Remove the Loading Belt from the Loading Motor.

● INSTALLATION

1. Install new Loading Motor in reverse steps of REMOVAL.

■ A-39: REPLACEMENT OF TRANSISTOR PCB AND TRANSISTOR SPRING

● REMOVAL

1. Insert a small flat-blade screwdriver into the transistor spring as shown in Fig. 39-a.
2. Hold both edges of the transistor PCB (Ⓐ part) with your fingers and pull out the transistor PCB while turning the driver.

● INSTALLATION

1. Set the transistor spring in the place marked as shown in Fig. 39-b.
2. Fit the transistor PCB as shown in Fig. 39-b.

● NOTE

1. The unit should be unplugged from the AC outlet.
2. Do not scratch or mar the cylinder.
3. Be careful not to split the transistor PCB.
4. If the transistor spring is broken when holding or removing the transistor PCB, replace with a new one.

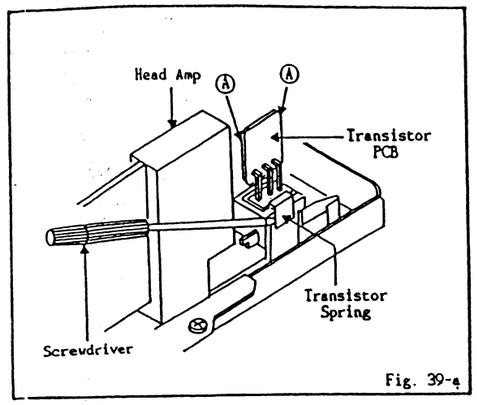


Fig. 39-a

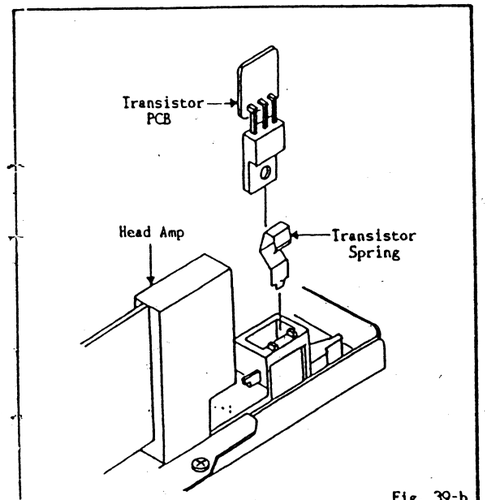


Fig. 39-b

■ A-40: INSTALLATION OF ROTARY SW

● INSTALLATION

1. Rotate the Loading Gear L in the direction Ⓔ in full.
2. As viewed from the top of the deck, adjust so that the point Ⓐ of the actuator and point Ⓑ of the Main Chassis.
3. Adjust the point Ⓒ of the Main Cam within width of Ⓓ.
4. Adjust so that the Fan Shaped Gear Ⓕ engages with the Loading Gear L. (Fig. 40-a)
5. Adjust the stop position in the Stop mode, install the Rotary Switch. The screw position and stop position of the Rotary Switch are aligned.
6. Adjust the stop position of the Rotary Switch as indicated Fig. 40-b, Ⓐ and Ⓑ are aligned.

● CONFIRMATION

When in the Rec.Pause Mode, confirm it the distance of the Pinch Roller face to the Capstan Shaft face is 0.5~1.5mm. If the distance is over, move the Rotary Switch in the direction of ①.

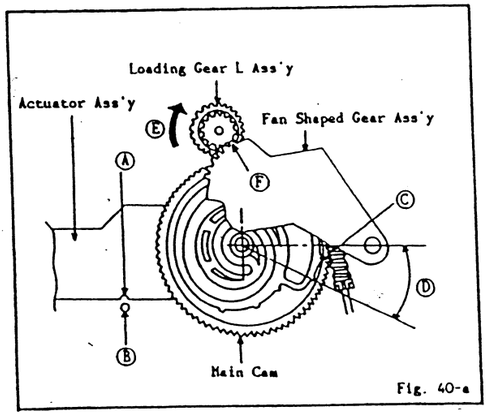


Fig. 40-a

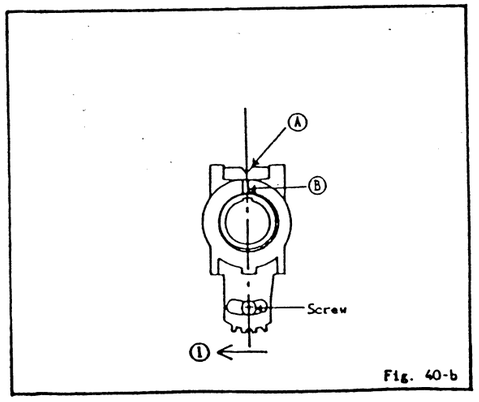


Fig. 40-b

Remove the following parts before preforming electric adjustment.

1. Top Cabinet (2 screws)
2. Bottom Plate (5 screws)

After adjustment, reassemble the unit in reverse order.

Prepare the following measurement tools for the electrical adjustment.

1. Oscilloscope (2 channel type)
2. AC Voltmeter
3. Quartz Timer
4. Sweep-Marker Generator
5. AFT Adjustment Oscillator
6. Synchro Scope
7. VIF Unit
8. Voltmeter
9. Frequency Counter
10. DC Voltmeter
11. Spectrum Analyzer
12. DC Supplier

ADJUSTMENT PROCEDURE

■ E-1~3: NOT REQUIRED FOR THIS MODEL

■ E-4: PB. SWITCHING POSITION.

CONDITIONS

MODE - PLAYBACK
Input signal - Standard test tape

NOTE: Tracking control should be set at click point.

INSTRUCTIONS

(1) Connect CH-1 on the oscilloscope to TP2001 and connect CH-2 on the oscilloscope to TP4201.
(2) Adjust VR2001 so that the waveform of the oscilloscope measures 6.5±0.5(H) at both leading and trailing edges as shown in Fig. 4-a, b.

CHART/CHARACTERISTICS

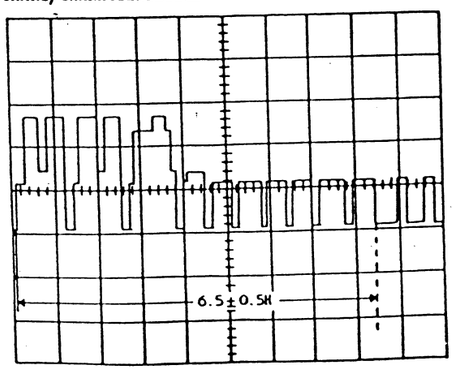


Fig. 4-a

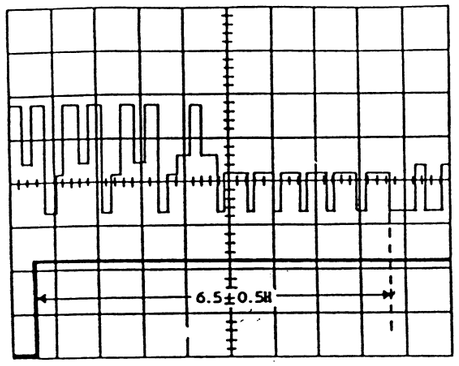


Fig. 4-b

■ E-5: NOT REQUIRED FOR THIS MODEL

■ E-6: TRACKING FIX ADJUSTMENT

CONDITIONS

MODE - PLAYBACK
Input signal - Standard test tape

NOTE: Tracking control should be set at click point.

INSTRUCTIONS

(1) Connect CH-1 on the oscilloscope to TP2001 and connect CH-2 on the oscilloscope to TP2003.
(2) Adjust VR2002 so that the "I" portion measures 2.0±0.3msec as shown in Fig. 6.

CHART/CHARACTERISTICS

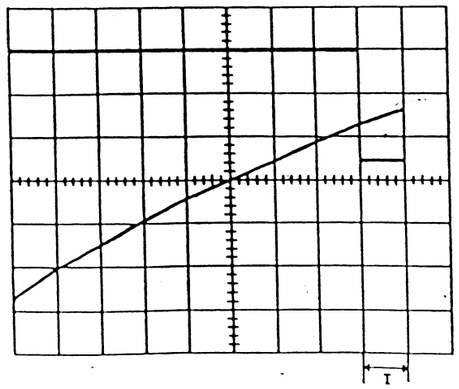


Fig. 6

■ E-7~11: NOT REQUIRED FOR THIS MODEL

■ E-12: E-E LEVEL ADJUSTMENT

CONDITIONS

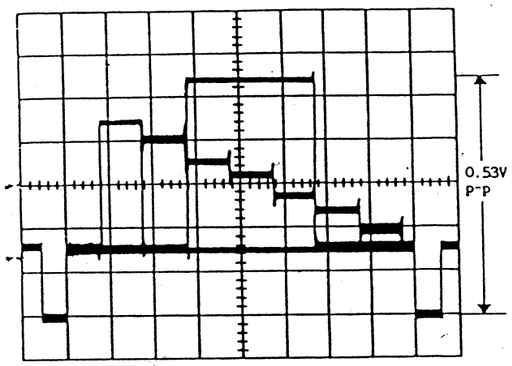
MODE - STOP
Input signal - Color bar

NOTE: Video out of the unit should be terminated with 75 ohm load.

INSTRUCTIONS

(1) Connect the oscilloscope to TP4005.
(2) Adjust VR4004 so that the waveform measures 0.53±0.01Vp-p as shown in Fig. 12.

CHART/CHARACTERISTICS



100mV 5 μs/div

Fig. 12

■ E-13~15: NOT REQUIRED FOR THIS MODEL

■ E-16: SET CARRIER AND DEVIATION ADJUSTMENT

CONDITIONS

MODE - STOP
Input signal - Color bar

INSTRUCTIONS

(1) Connect TP4001 to the input terminal on the spectrum analyzer, then adjust 3.8MHz and 4.8MHz as shown in Fig. 16 with VR4001 and VR4002.

VR4001 (SET CARRIER)
VR4002 (DEVIATION)

CHART/CHARACTERISTICS

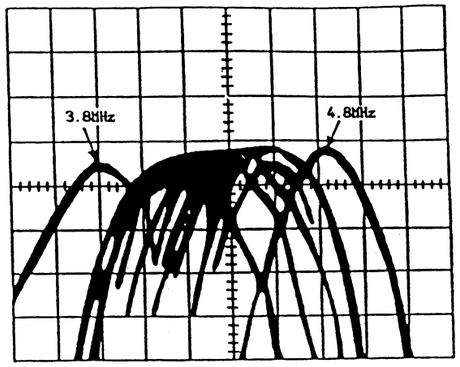


Fig. 16

■ E-17: RECORD CURRENT ADJUSTMENT

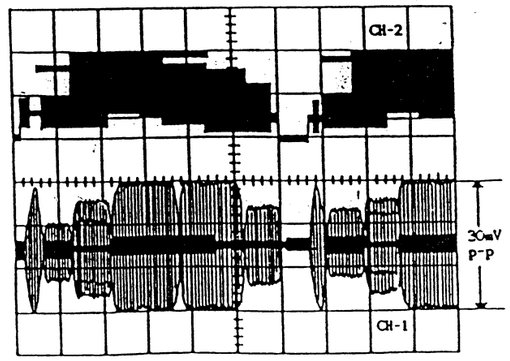
CONDITIONS

MODE - RECORD(SP MODE)
Input signal - Color bar

INSTRUCTIONS

(1) Connect CH-1 on the oscilloscope to TP4101 and CH-2 to TP4201. Reduce Rec.-Luminance signal factors by turning VR4102 fully counter-clockwise.
(2) Adjust VR4101 so that the cyan level becomes 30±2mVp-p as shown in Fig. 17-a.
(3) Adjust VR4102 so that the horizontal sync. level becomes 120±5mVp-p as shown in Fig. 17-b.

CHART/CHARACTERISTICS



10mV 5 μs/div

Fig. 17-a

Remove the following parts before preforming electric adjustment.

1. Top Cabinet (2 screws)
2. Bottom Plate (5 screws)

After adjustment, reassemble the unit in reverse order.

Prepare the following measurement tools for the electrical adjustment.

1. Oscilloscope (2 channel type)
2. AC Voltmeter
3. Quartz Timer
4. Sweep-Marker Generator
5. AFT Adjustment Oscillator
6. Synchro Scope
7. VIF Unit
8. Voltmeter
9. Frequency Counter
10. DC Voltmeter
11. Spectrum Analyzer
12. DC Supplier

ADJUSTMENT PROCEDURE

■ E-1~3: NOT REQUIRED FOR THIS MODEL

■ E-4: PB. SWITCHING POSITION.

CONDITIONS

MODE - PLAYBACK
Input signal - Standard test tape

NOTE: Tracking control should be set at click point.

INSTRUCTIONS

(1) Connect CH-1 on the oscilloscope to TP2001 and connect CH-2 on the oscilloscope to TP4201.
(2) Adjust VR2001 so that the waveform of the oscilloscope measures 6.5±0.5(H) at both leading and trailing edges as shown in Fig. 4-a, b.

CHART/CHARACTERISTICS

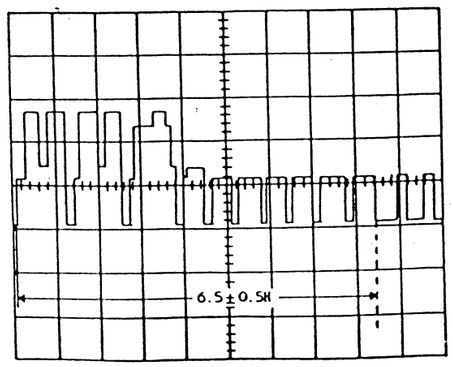


Fig. 4-a

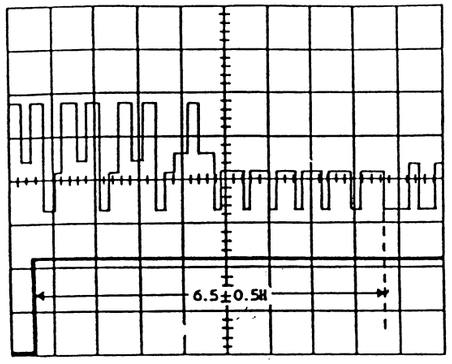


Fig. 4-b

■ E-5: NOT REQUIRED FOR THIS MODEL

■ E-6: TRACKING FIX ADJUSTMENT

CONDITIONS

MODE - PLAYBACK
Input signal - Standard test tape

NOTE: Tracking control should be set at click point.

INSTRUCTIONS

(1) Connect CH-1 on the oscilloscope to TP2001 and connect CH-2 on the oscilloscope to TP2003.
(2) Adjust VR2002 so that the "I" portion measures 2.0±0.3msec as shown in Fig. 6.

CHART/CHARACTERISTICS

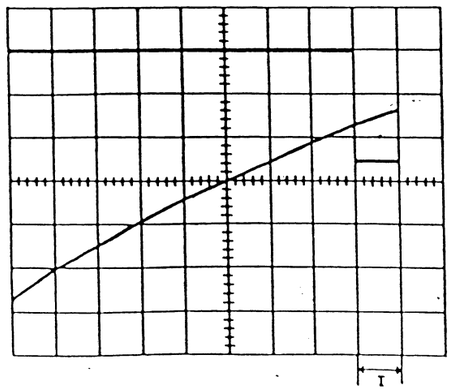


Fig. 6

■ E-7~11: NOT REQUIRED FOR THIS MODEL

■ E-12: E-E LEVEL ADJUSTMENT

CONDITIONS

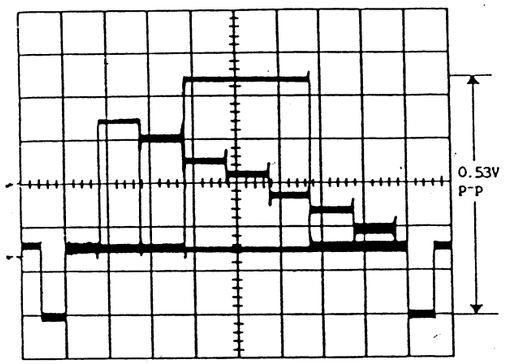
MODE - STOP
Input signal - Color bar

NOTE: Video out of the unit should be terminated with 75 ohm load.

INSTRUCTIONS

(1) Connect the oscilloscope to TP4005.
(2) Adjust VR4004 so that the waveform measures 0.53±0.01Vp-p as shown in Fig. 12.

CHART/CHARACTERISTICS



100mV 5 μs/div

Fig. 12

■ E-13~15: NOT REQUIRED FOR THIS MODEL

■ E-16: SET CARRIER AND DEVIATION ADJUSTMENT

CONDITIONS

MODE - STOP
Input signal - Color bar

INSTRUCTIONS

(1) Connect TP4001 to the input terminal on the spectrum analyzer, then adjust 3.8MHz and 4.8MHz as shown in Fig. 16 with VR4001 and VR4002.

VR4001 (SET CARRIER)
VR4002 (DEVIATION)

CHART/CHARACTERISTICS

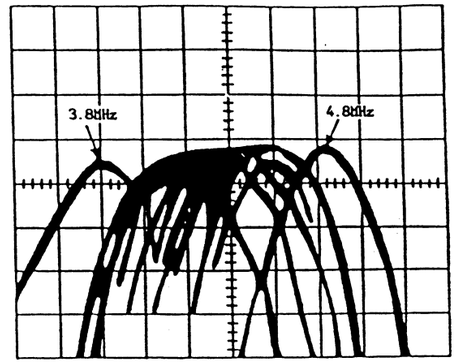


Fig. 16

■ E-17: RECORD CURRENT ADJUSTMENT

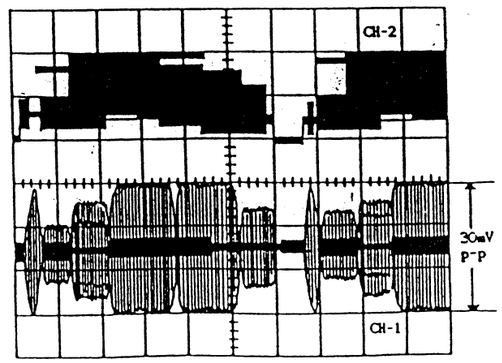
CONDITIONS

MODE - RECORD(SP MODE)
Input signal - Color bar

INSTRUCTIONS

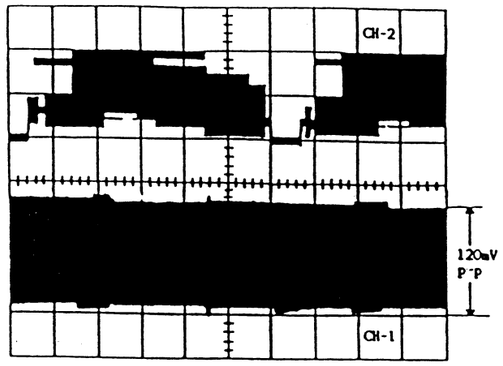
(1) Connect CH-1 on the oscilloscope to TP4101 and CH-2 to TP4201. Reduce Rec.-Luminance signal factors by turning VR4102 fully counter-clockwise.
(2) Adjust VR4101 so that the cyan level becomes 30±2mVp-p as shown in Fig. 17-a.
(3) Adjust VR4102 so that the horizontal sync. level becomes 120±5mVp-p as shown in Fig. 17-b.

CHART/CHARACTERISTICS



10mV 5 μs/div

Fig. 17-a



50mv 5 μs/div
Fig. 17-b

■E-18: PLAYBACK LUMINANCE LEVEL ADJUSTMENT

CONDITIONS

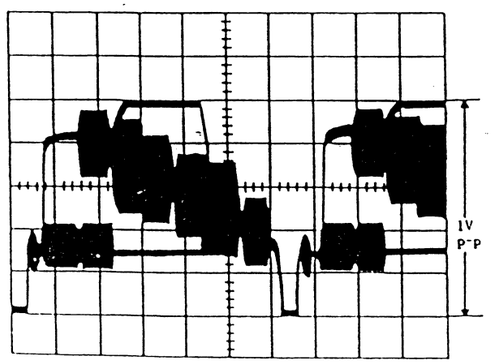
MODE - PLAYBACK
Input signal - Color bar test tape

NOTE: Video out of the unit should be terminated with 75 ohm load.

INSTRUCTIONS

(1) Connect the oscilloscope to TP4201.
(2) Adjust VR4003 so that the signal becomes 1.0±0.05V as shown in Fig. 18.

CHART/CHARACTERISTICS :



200mV 10 μs/div
Fig. 18

■E-19: AUDIO BIAS CURRENT ADJUSTMENT

CONDITIONS

MODE - RECORD
Input signal - No signal

INSTRUCTIONS

Connect the AC voltmeter to the arrow point, then adjust the voltage to 3.0±0.1mVrms with VR5002.

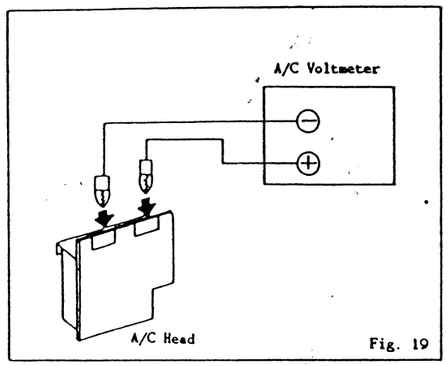


Fig. 19

■E-20: AUDIO PLAYBACK LEVEL ADJUSTMENT

CONDITIONS

MODE - Self(RECORD and PLAYBACK)
Input signal - 1KHz 300mVrms, Audio signal
Color bar

INSTRUCTIONS

(1) Connect the AC voltmeter to audio out jack, which is terminated with 47K ohm resistor.
(2) Record and then playback the audio signal as specified.
(3) Adjust VR5001 so that the playback output may become 390±10mVrms.

■E-21~27: NOT REQUIRED FOR THIS MODEL

■E-28-1: SECAM IDENTIFICATION (1) ADJUSTMENT

CONDITIONS

MODE - RECORD
Input signal - SECAM RF signal

INSTRUCTIONS

(1) Connect CH-1 of oscilloscope to TP4501 and CH-2 of oscilloscope to TP3702.
(2) Adjust L3702 so that peak of waveform A and leading edge of video signal of waveforme B may become same as shown in Fig. 28.

■E-28-2: SECAM IDENTIFICATION (2) ADJUSTMENT

CONDITIONS

MODE - RECORD
Input signal - SECAM RF signal

INSTRUCTIONS

(1) Connect the oscilloscope to TP3701.
(2) Receive SECAM RF signal at 33dB.
(3) At this time, adjust TP3701 to High Level with VR3701
(4) Next, check that the TP3701 will indicate Low Level with adjusting the output level to 31dB.
(5) Receiving the PAL signal, check that the TP3701 will indicate Low Level regardless of output strength.

CHART/CHARACTERISTICS

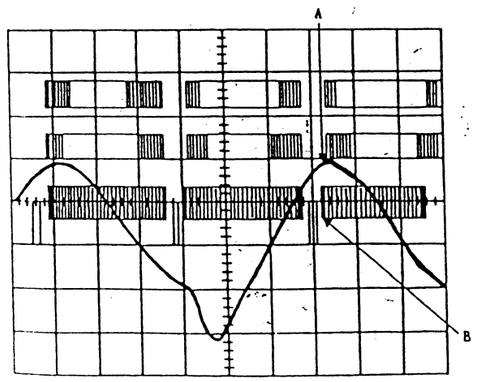


Fig. 28

■E-29~57: NOT REQUIRED FOR THIS MODEL

■E-58: NOISE CANCEL ADJUSTMENT

CONDITION

MODE - PLAYBACK
Input signal - Color bar test tape

INSTRUCTIONS

(1) Connect CH-1 of the oscilloscope to TP4003 and CH-2 on the oscilloscope to TP4004.
(2) Adjust the VR4005 so that the waveform of CH-1 is straight as shown in Fig. 58.

CHART/CHARACTERISTICS

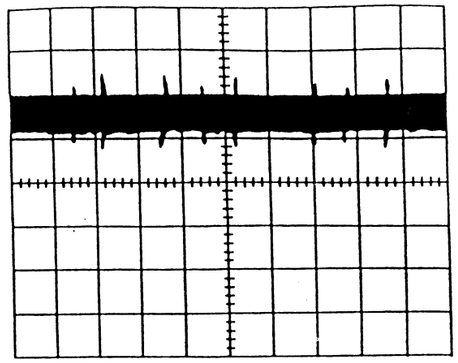


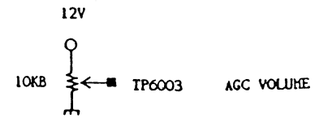
Fig. 58

■E-59, 60: NOT REQUIRED FOR THIS MODEL

■E-61: VIDEO IF ADJUSTMENT

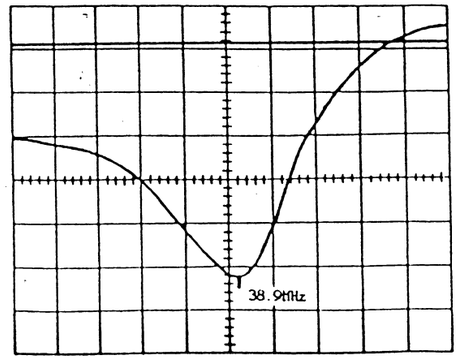
INSTRUCTIONS

(1) Supply 12V with the DC Supplier.
(2) Terminate TP6004 and TP6005 with a 100 ohm resistor.



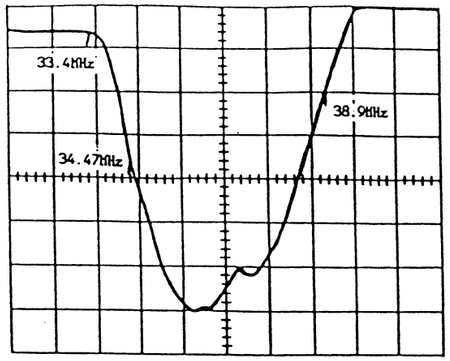
(3) Connect the output of Sweep-Marker Generator to TP6006.
(4) Adjust L6004 so that output waveform of TP6007 may become as shown in Fig. 61-a.
(5) Connect the output of Sweep-Marker Generator to the Tuner Pack IP.
(6) Make sure that the output of waveform of TP6007 is as shown in Fig. 61-b.

CHART/CHARACTERISTICS



Single peak waveform
Fig. 61-a

ELECTRICAL ADJUSTMENTS



Overall waveform

Fig. 61-b

■E-62: AFT ADJUSTMENT

NOTE: Disconnect the condenser C6014 in the adjustment.

INSTRUCTIONS

(1) Connect output of the Sweep-Marker Generator to Tuner Pack TP and adjust L6005 so that output waveform for TP6002 is as shown in Fig. 62.
(2) Disconnect the Sweep-Marker Generator and the oscilloscope from Tuner Pack TP and connect the condenser C6014.
(3) Connect the AFT adjustment oscillator (38.9MHz) to the Tuner Pack TP through 2.2K ohm and connect the DC voltmeter to TP6002.
(4) Adjust L6005 so that voltage at AFT switch ON is as much as one at AFT switch OFF.

CHART/CHARACTERISTICS

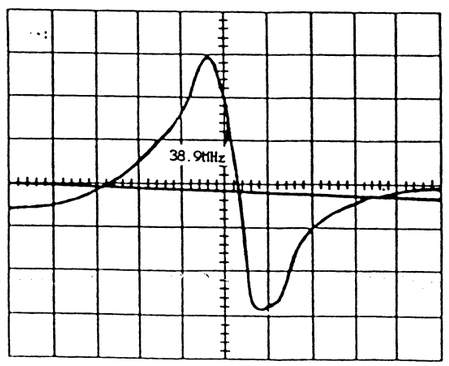


Fig. 62

■E-63: NOT REQUIRED FOR THIS MODEL

■E-64: RF AGC ADJUSTMENT

CONDITIONS

MODE - STOP

INSTRUCTIONS

(1) Receive the Monochrome Pattern signal.
(2) Connect the DC Voltmeter to TP6001.
(3) Set the RF input to 80dB.
(4) Adjust VR6001 so that the voltage is equal to 4.2±0.1V.

■E-65: COLOR LEVEL ADJUSTMENT

CONDITIONS

MODE - STOP

INSTRUCTIONS

(1) Obtain a color bar signal.
(2) Connect the oscilloscope to TP6008.
(3) Adjust VR6002 so that the magenta level is 55±5% when Y-level is 1Vp-p.

CHART/CHARACTERISTICS

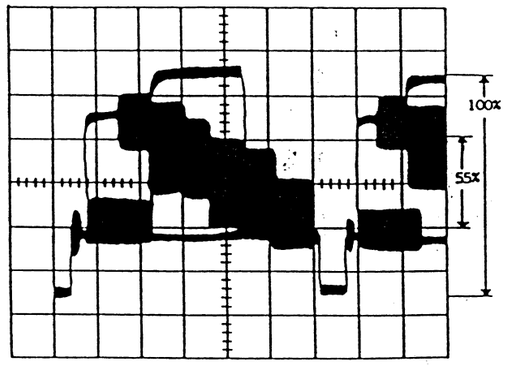


Fig. 65

■E-66: CLOCK ADJUSTMENT

CONDITIONS

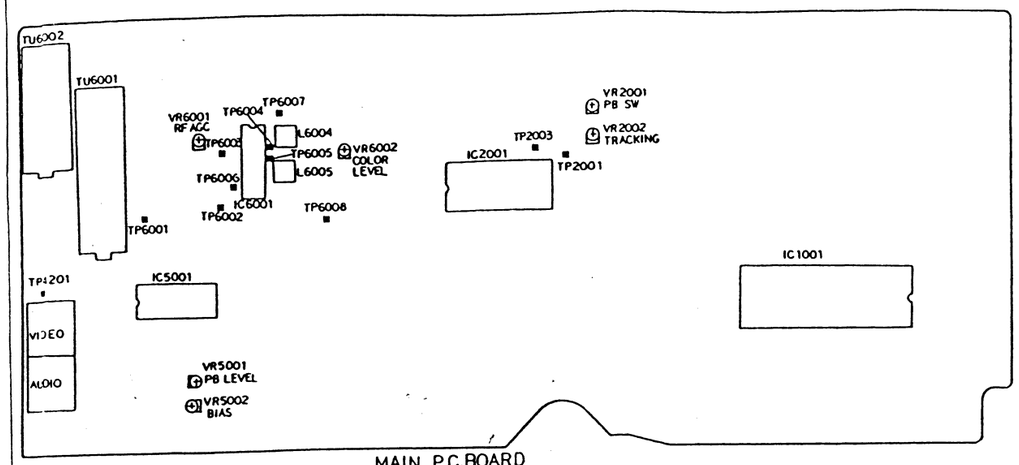
MODE - STOP
POWER ON
CLOCK SET

NOTE: Quartz timer should be supplied with power for at least 30 minutes before the adjustment.

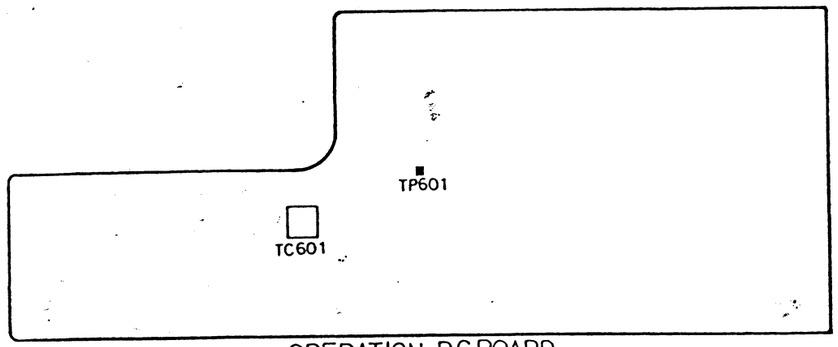
INSTRUCTIONS

(1) Connect the Quartz timer to TP601.
(2) Adjust TC601 so that day difference is within 0.15 sec.

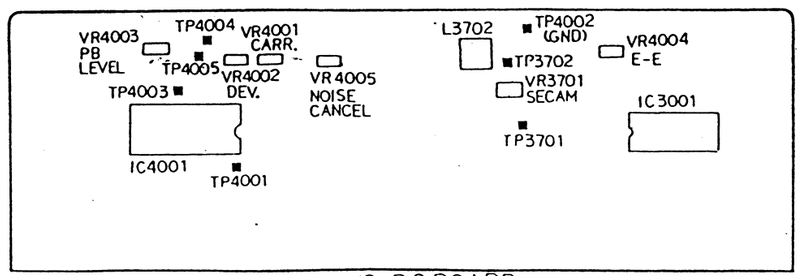
MAJOR COMPONENTS LOCATION GUIDE



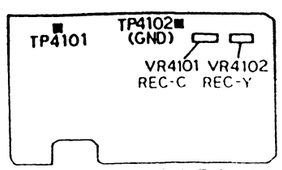
MAIN P.C.BOARD



OPERATION P.C.BOARD

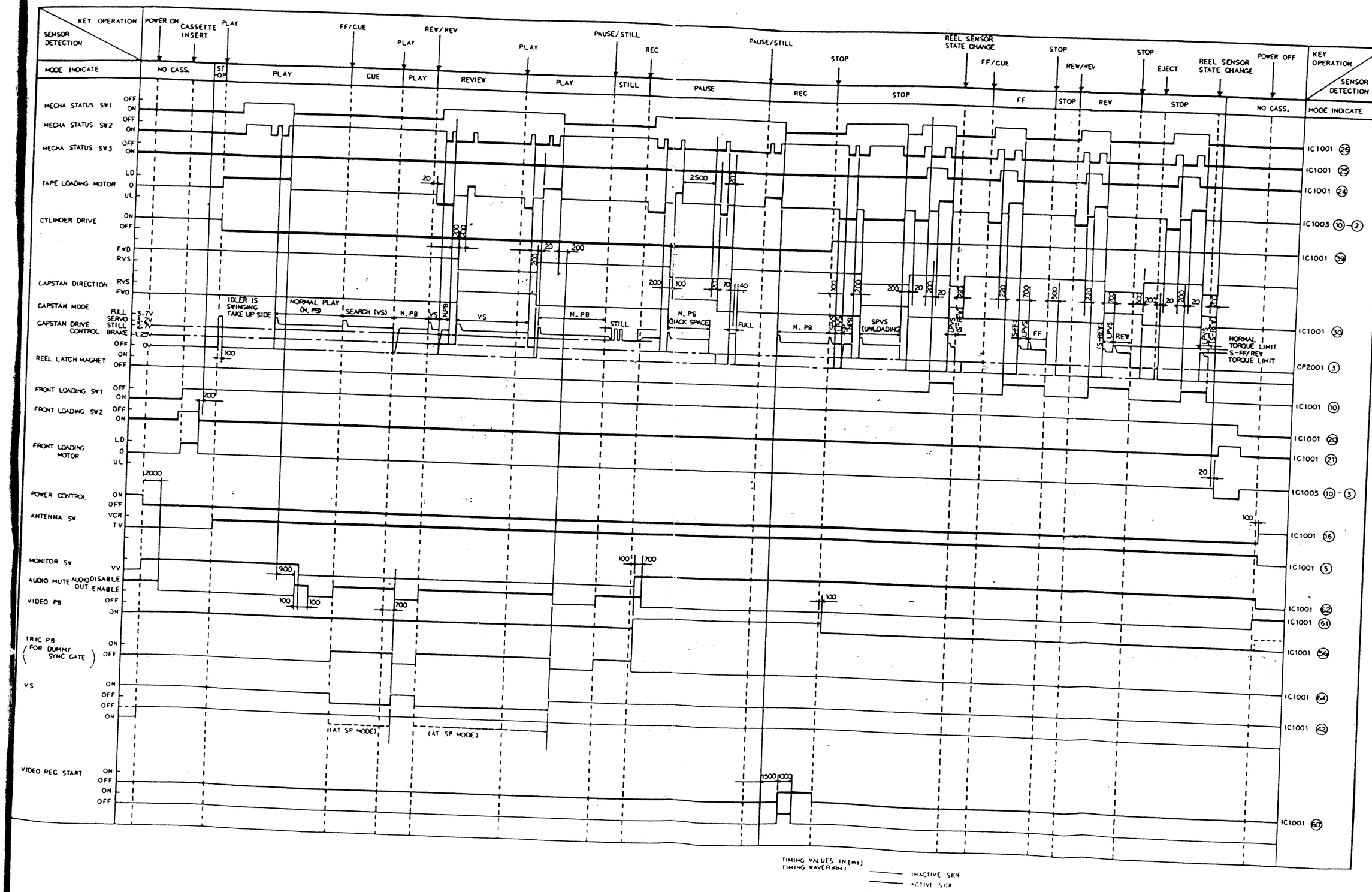


Y/C P.C.BOARD



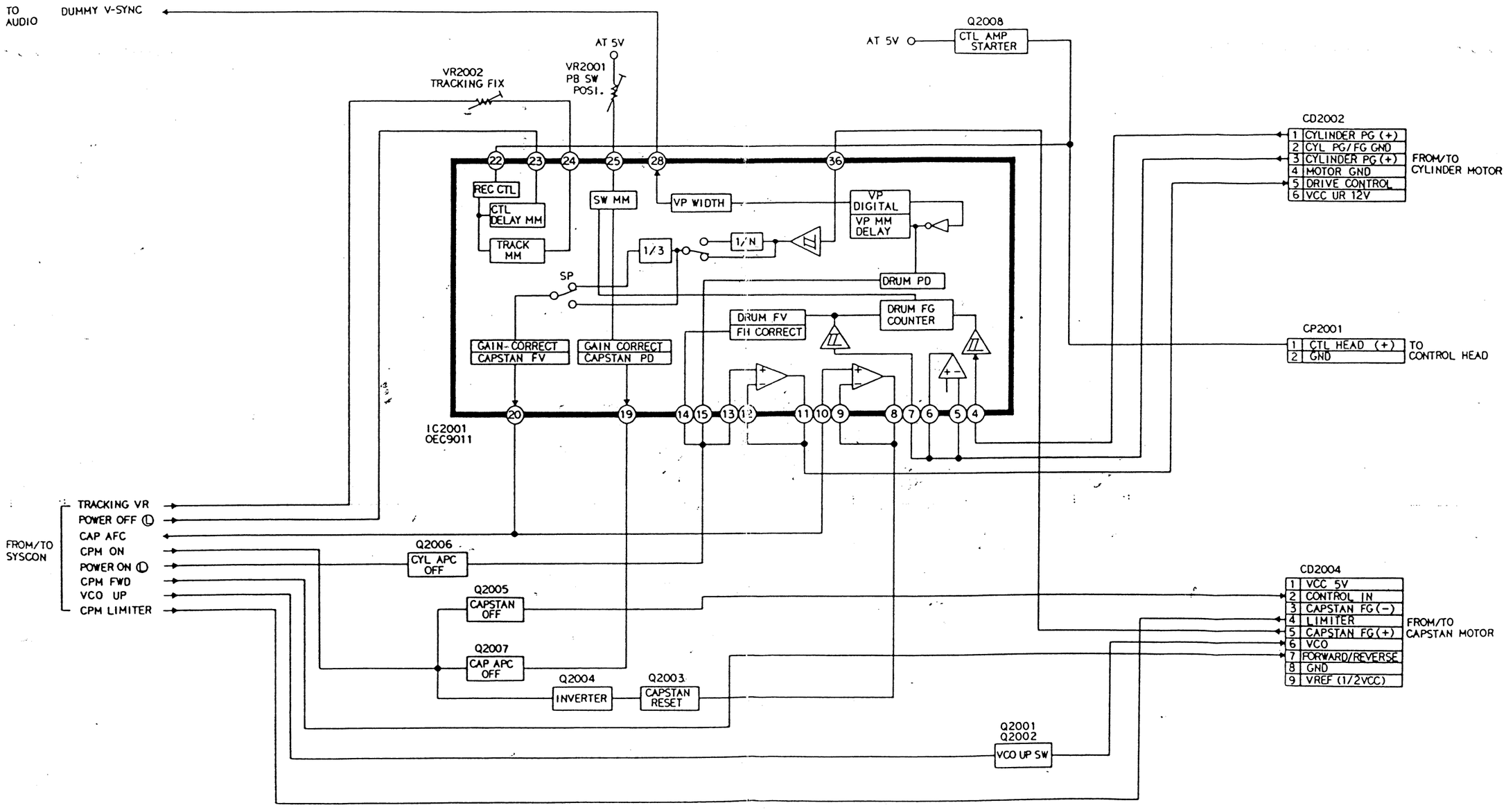
HEAD AMP P.C.BOARD

TIMING CHART

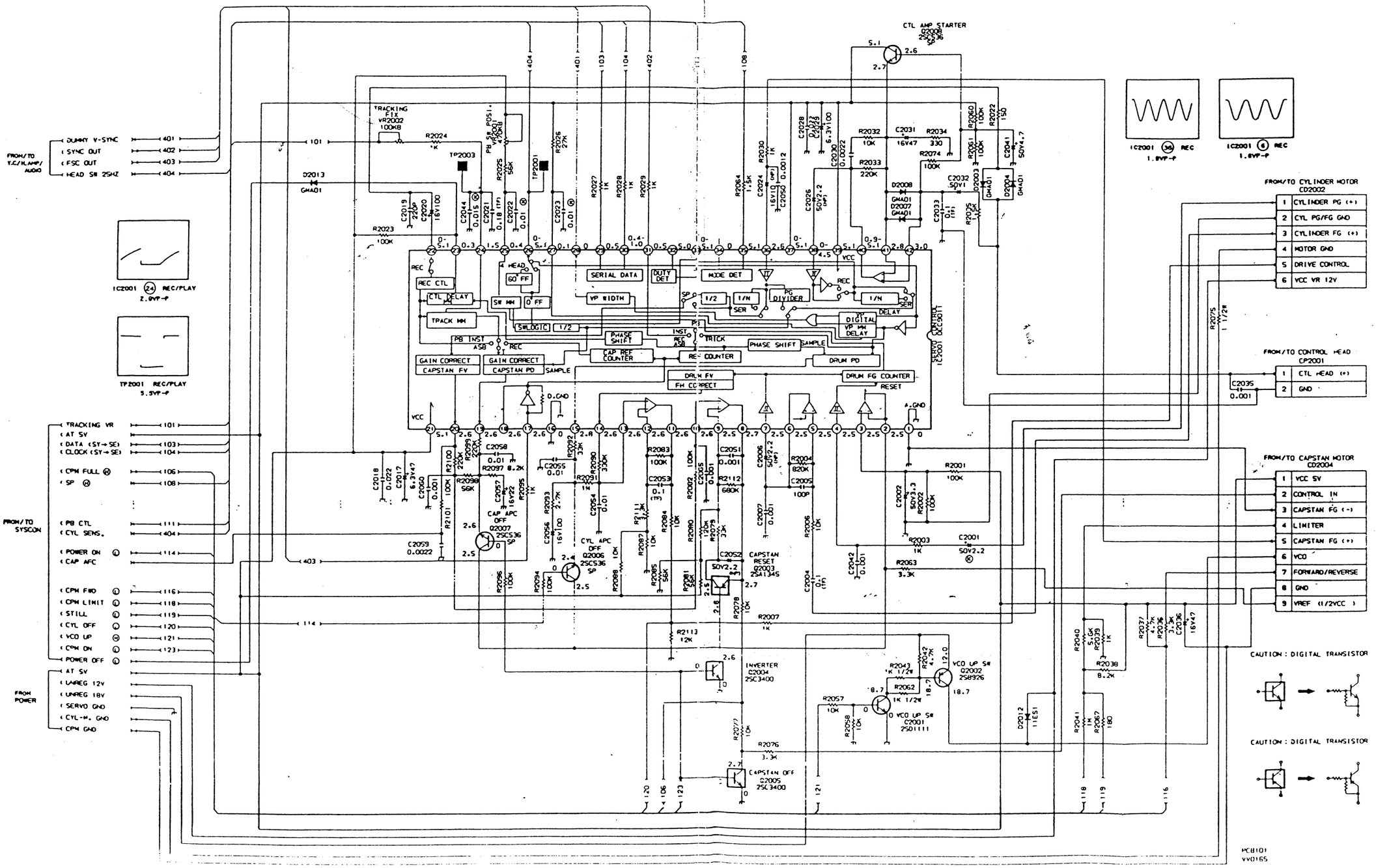


TIMING CHART

SERVO BLOCK DIAGRAM



SERVO SCHEMATIC DIAGRAM

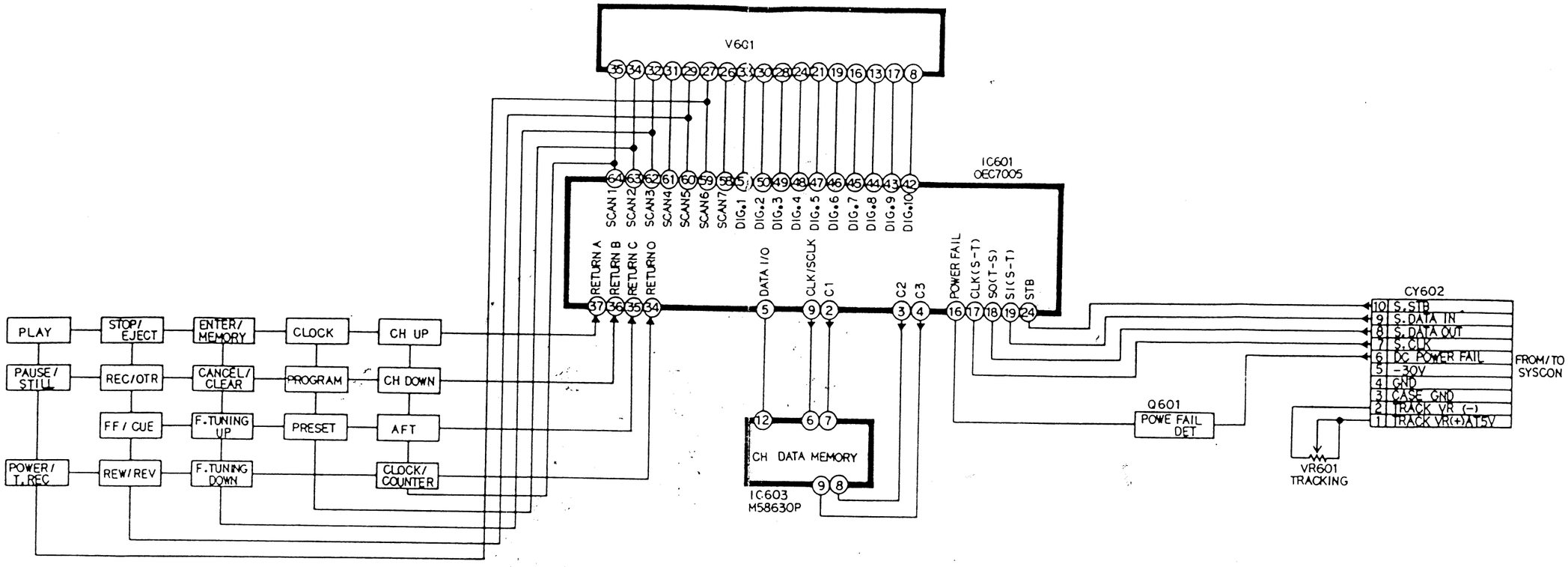


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

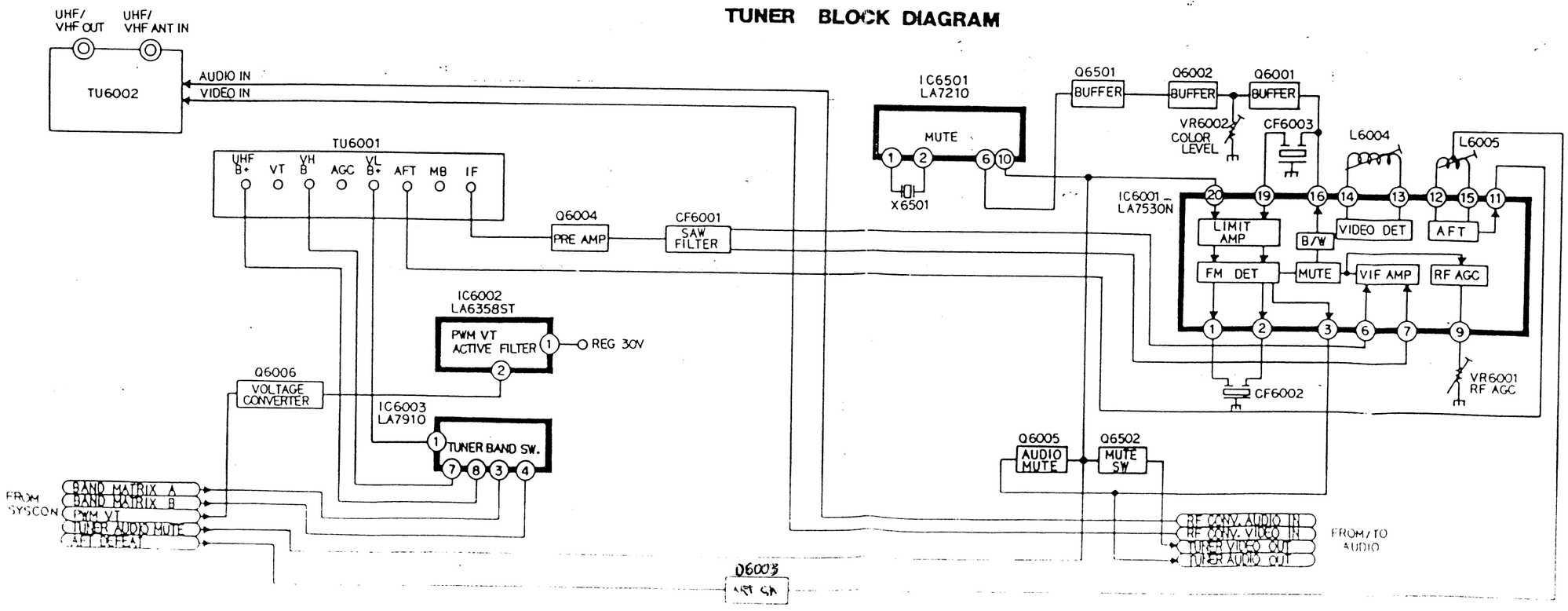
SERVO SCHEMATIC DIAGRAM

1-8328

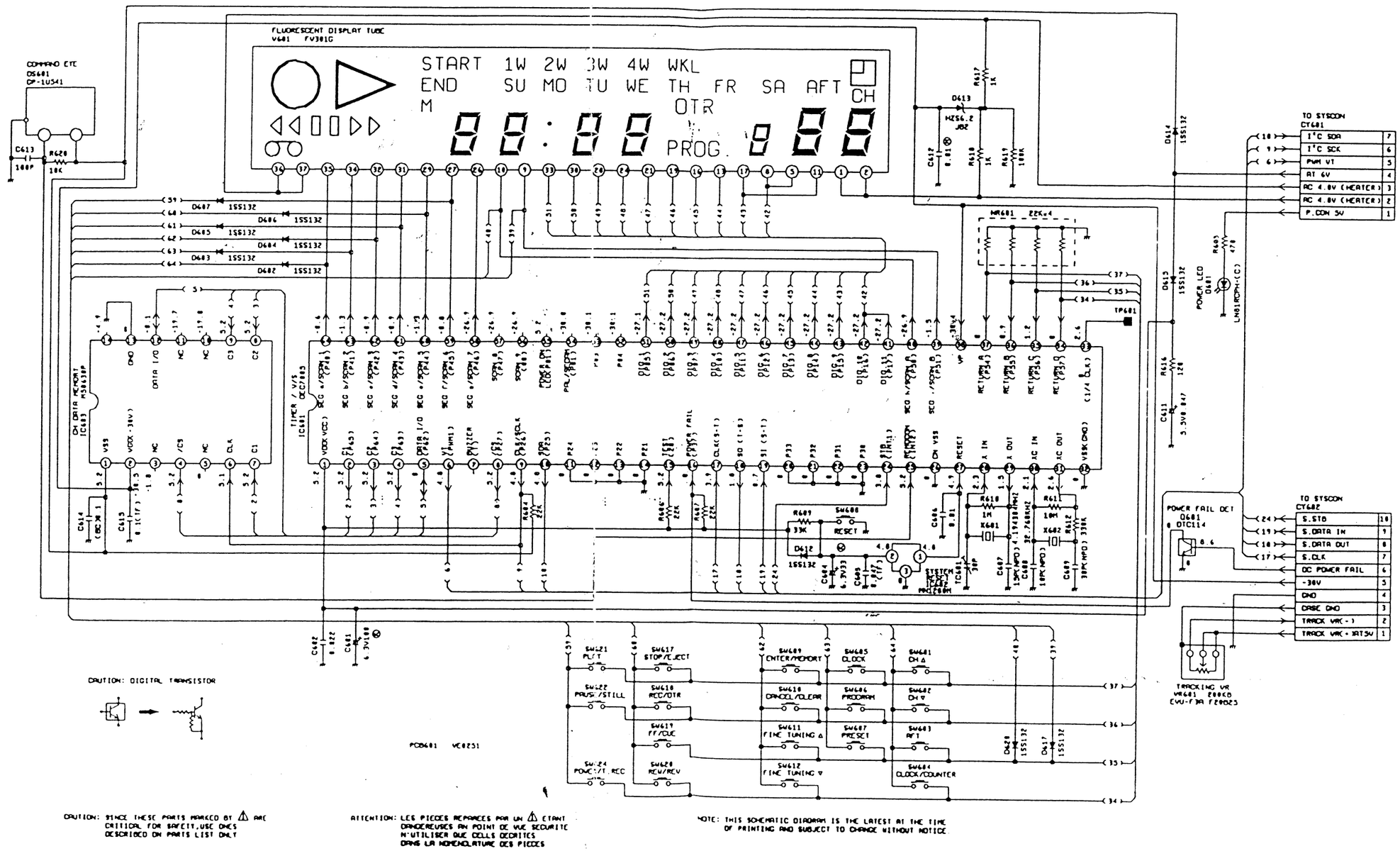
OPERATION BLOCK DIAGRAM



TUNER BLOCK DIAGRAM



OPERATION SCHEMATIC DIAGRAM



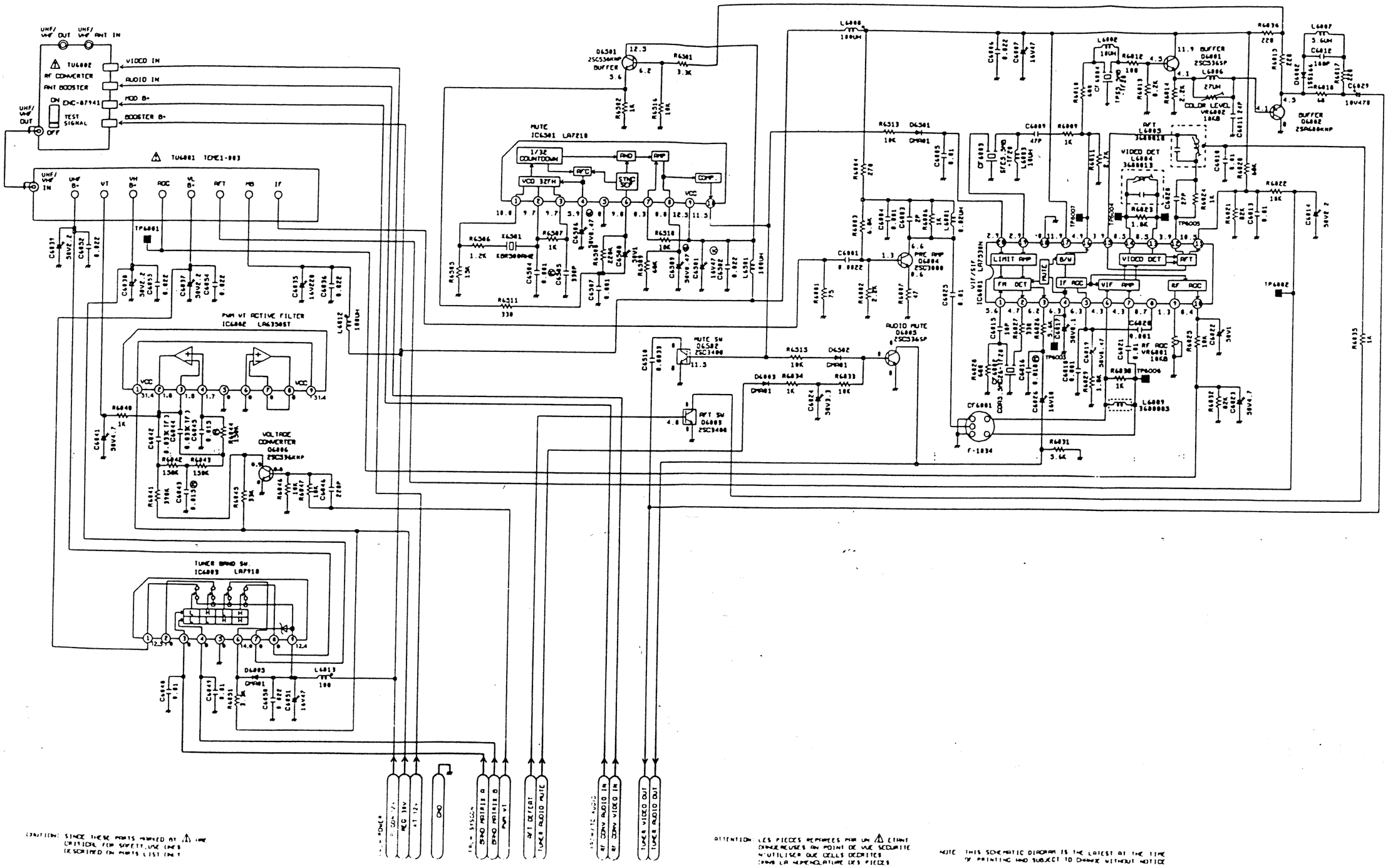
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY

ATTENTION: LES PIECES REPEREES PAR UN ⚠ ETANT DANGEREUSES AU POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

OPERATION SCHEMATIC DIAGRAM

TUNER SCHEMATIC DIAGRAM



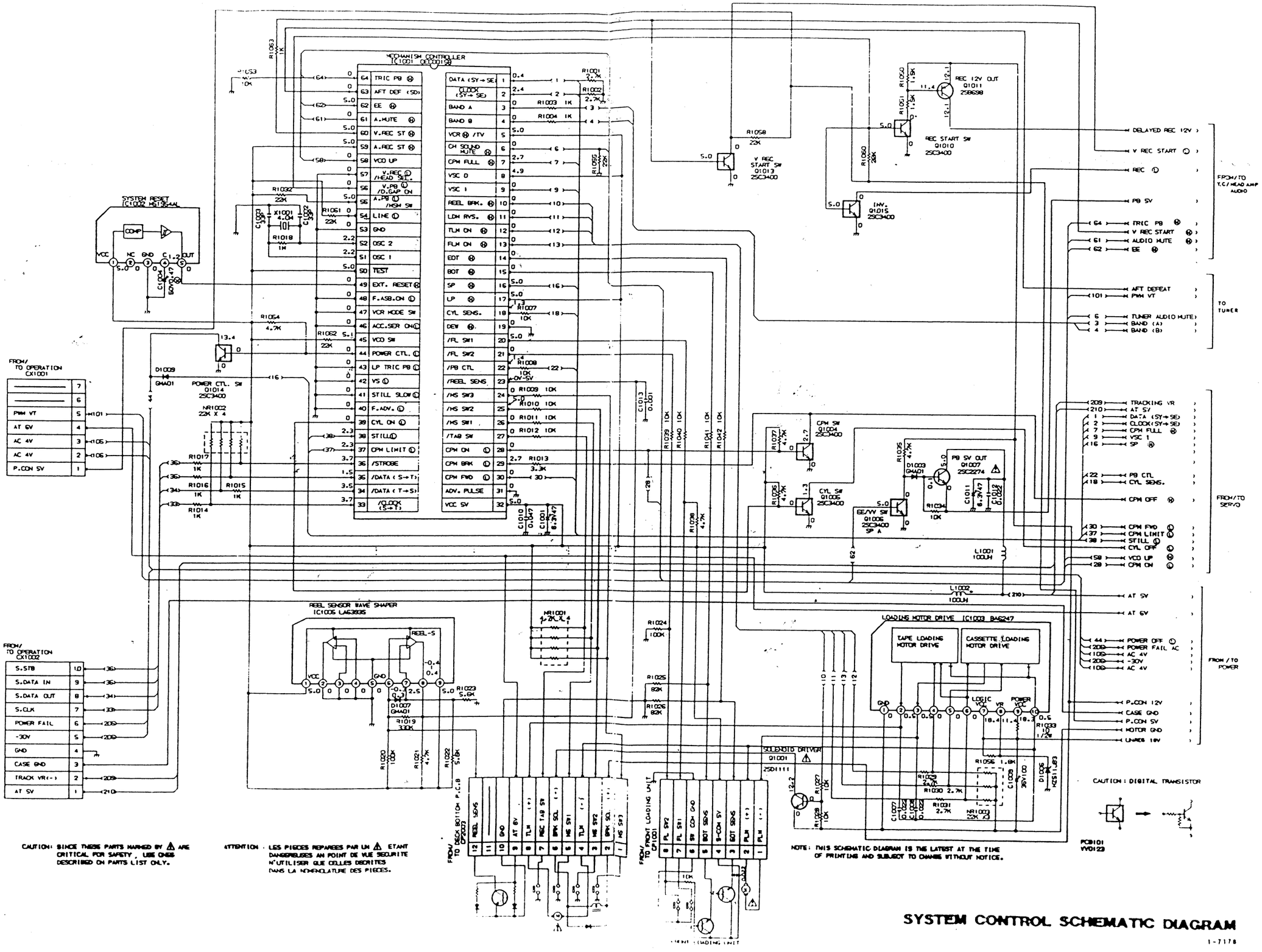
CAUTION: SINCE THESE PARTS MARKED AT ⚠ ARE CRITICAL FOR SAFETY, USE ONLY DESCRIBED IN PARTS LIST ONLY

ATTENTION: LES PIECES REPEREES PAR UN ⚠ ETANT DANGEREUSES EN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

TUNER SCHEMATIC DIAGRAM

SYSTEM CONTROL SCHEMATIC DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

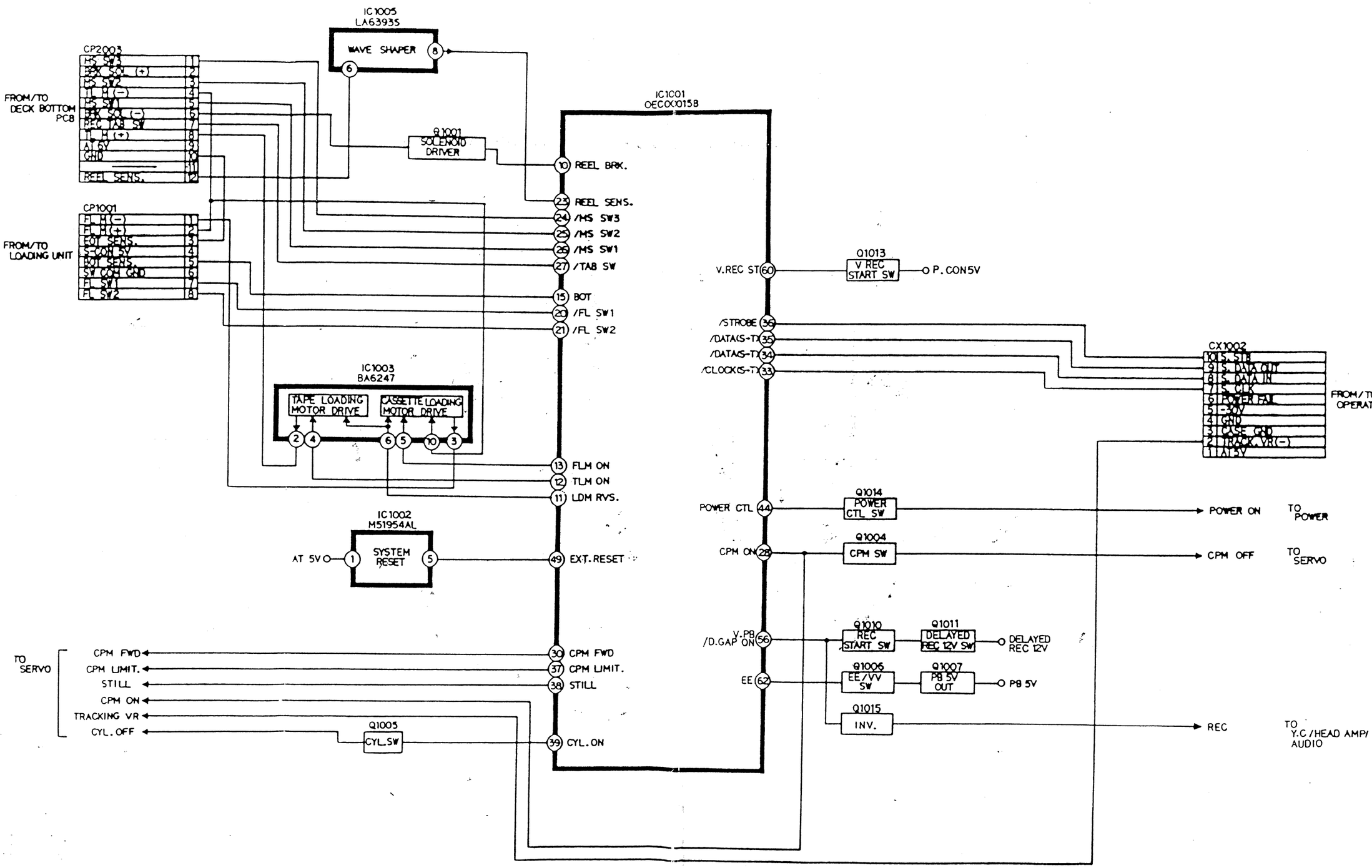
ATTENTION : LES PIECES REPEREES PAR UN ⚠ ETANT DANGEREUSES AU POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

SYSTEM CONTROL SCHEMATIC DIAGRAM

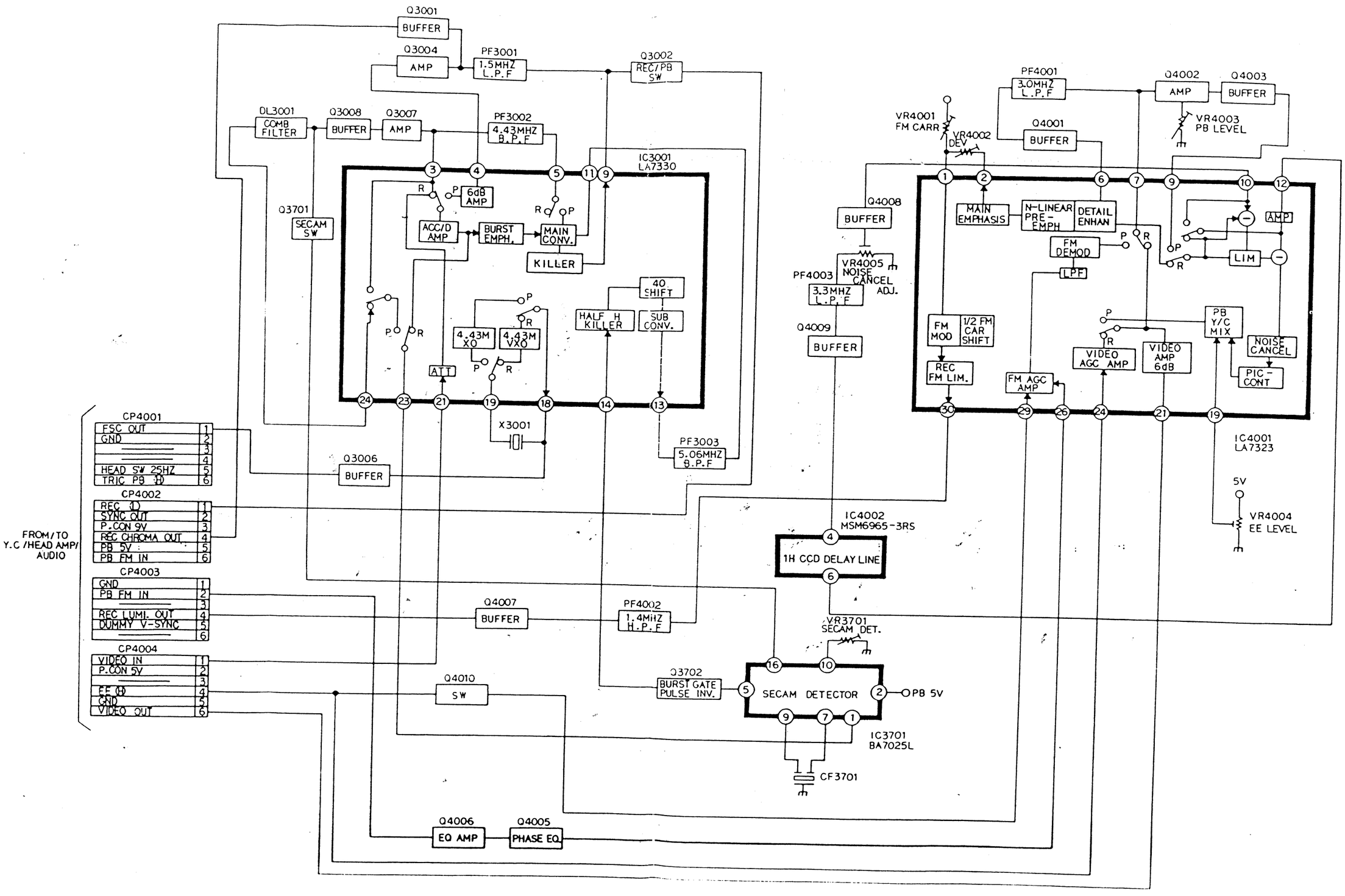
1-7178

SYSTEM CONTROL BLOCK DIAGRAM



SYSTEM CONTROL BLOCK DIAGRAM

Y.C. BLOCK DIAGRAM

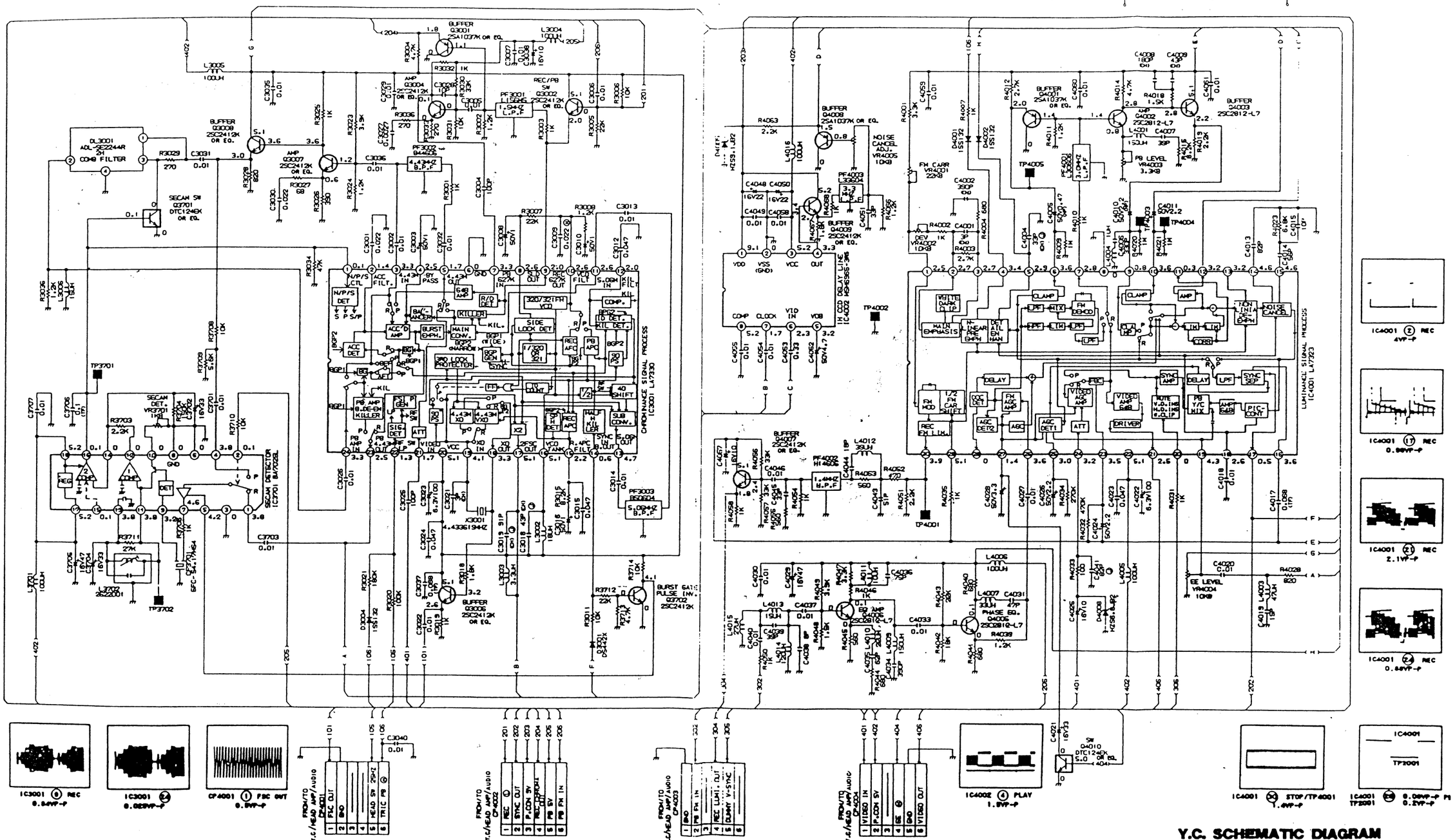


Y.C. BLOCK DIAGRAM

Y.C. SCHEMATIC DIAGRAM

CAUTION : DIGITAL TRANSISTOR

CAUTION : DIGITAL TRANSISTOR

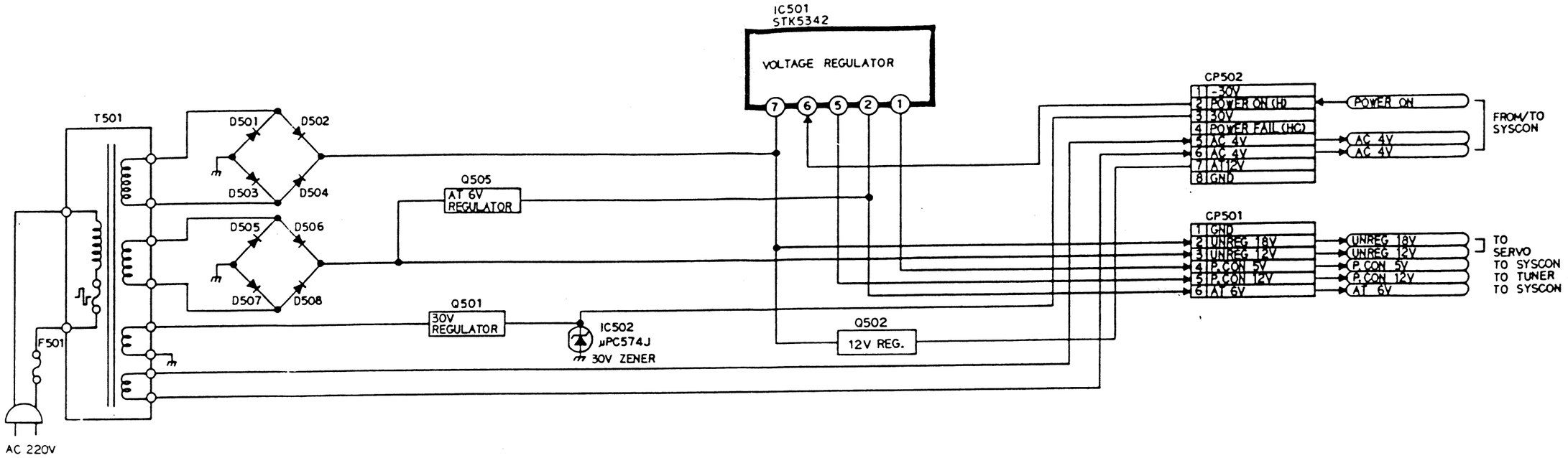


Y.C. SCHEMATIC DIAGRAM

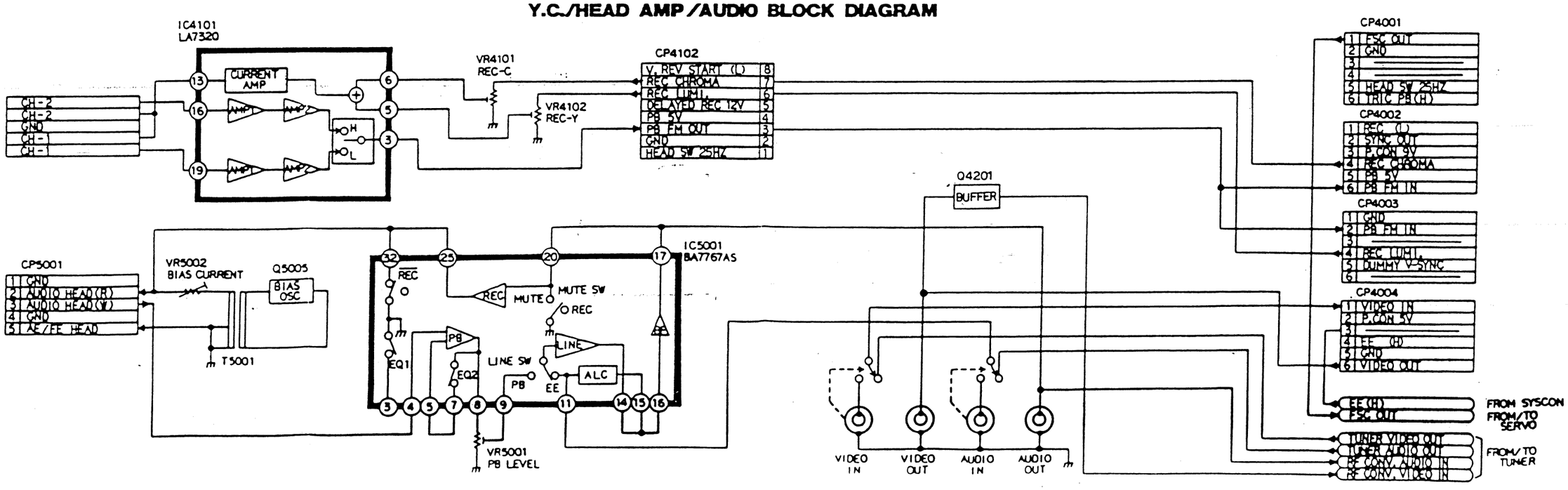
1-7180

GRAY

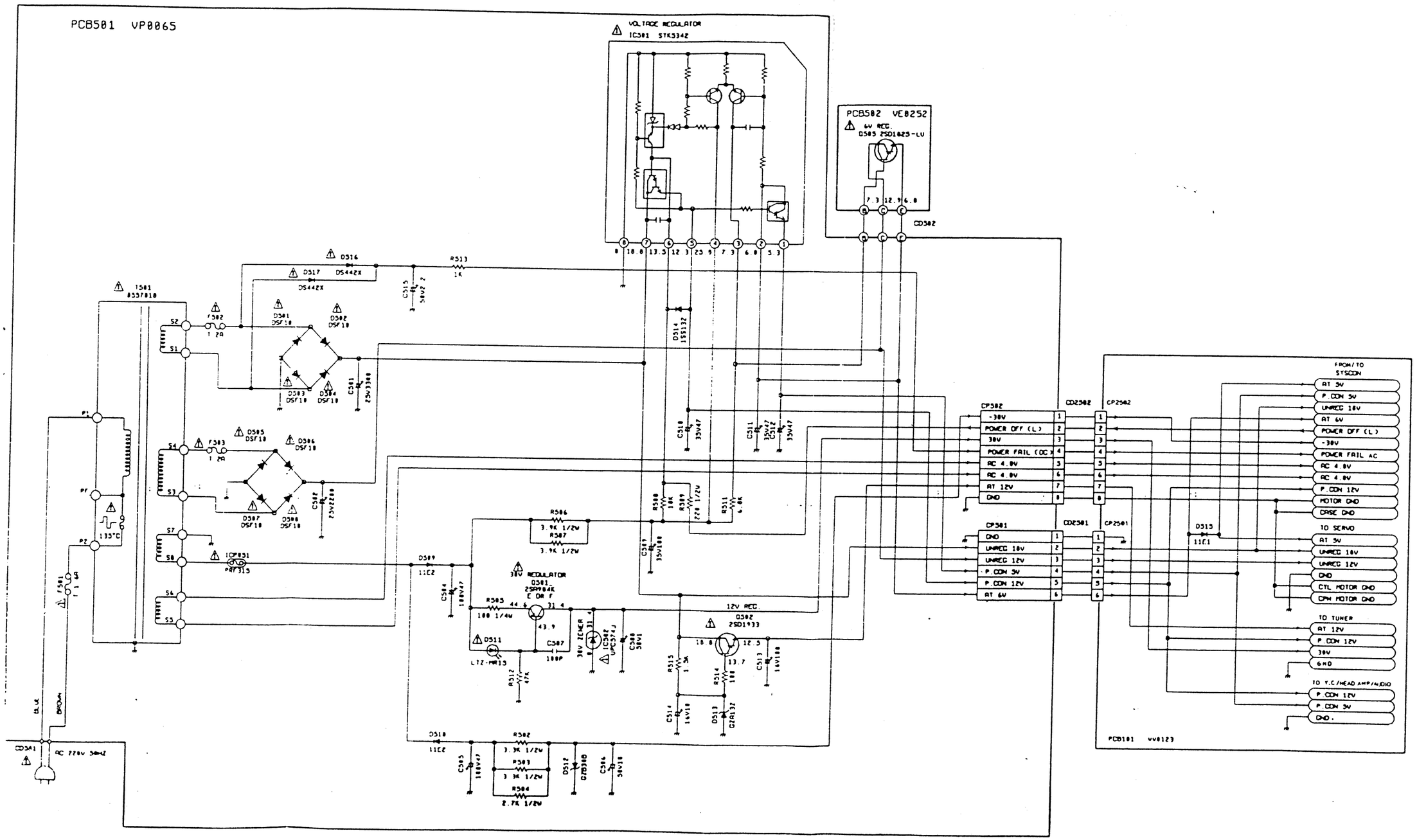
POWER SUPPLY BLOCK DIAGRAM



Y.C./HEAD AMP/AUDIO BLOCK DIAGRAM



POWER SUPPLY SCHEMATIC DIAGRAM



ATTENTION: SINCE THESE PARTS MARKED AT ⚠ ARE CRITICAL FOR SAFETY USE ONES DESCRIBED ON PARTS LIST ONLY

ATTENTION LES PIECES REPEREES PAR UN ⚠ SONT DANGEREUSES EN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

POWER SUPPLY SCHEMATIC DIAGRAM

1-7183

POWER SUPPLY SCHEMATIC DIAGRAM

PCB501 VP0065

VOLTAGE REGULATOR
IC501 STK5342

PCB502 VE8252
6V REG.
D505 2SD1825-LU

D516 DS442K
D517 DS442K
R513 1K
C515 50V2.2
T501 0557810
F502 1.2A
D501 DSF10
D502 DSF10
D503 DSF10
D504 DSF10
C501 25V3300
F503 1.2A
D505 DSF10
D506 DSF10
D507 DSF10
D508 DSF10
C502 25V2200
F501 T1.6A
135°C
IC0831 PQ1315
D509 11E2
R506 3.9K 1/2W
R507 3.9K 1/2W
C504 100V47
R505 44.6 100 1/4W
31.4
43.9
D511 LTZ-PR15
C507 100P
R512 47K
8V REGULATOR
D501 2SP984K E OR F
8V ZENER
IC0502 UPC574J
C506 50V1
12V REG.
D502 2SD1933
18.8
12.5
13.7
R515 1.5K
R514 100
C513 16V100
C514 16V10
D513 GZR132
D510 11E2
R502 3.3K 1/2W
R503 3.3K 1/2W
R504 2.7K 1/2W
C505 100V47
D512 GZR300
C506 16V10
C508 50V100
R508 10K
R509 270 1/2W
R511 6.8K
C509 35V100
C510 35V47
C511 35V47
C512 35V47
D514 1SS132
CD501 AC 220V 50HZ
BLUE
BROWN

CP502
-30V 1
POWER OFF (L) 2
30V 3
POWER FAIL (DC) 4
AC 4.8V 5
AC 4.8V 6
AT 12V 7
GND 8

CP501
GND 1
UNREG 18V 2
UNREG 12V 3
P.CON 5V 4
P.CON 12V 5
AT 6V 6

CD2502 CP2502
CD2501 CP2501

FROM/TO SYSCON
AT 5V
P.CON 5V
UNREG 18V
AT 6V
POWER OFF (L)
-30V
POWER FAIL AC
AC 4.8V
AC 4.8V
P.CON 12V
MOTOR GND
CASE GND

TO SERVO
AT 5V
UNREG 18V
UNREG 12V
GND
CTL MOTOR GND
CPH MOTOR GND

TO TUNER
AT 12V
P.CON 12V
30V
GND

TO V.C/HEAD AMP/AUDIO
P.CON 12V
P.CON 5V
GND

D515 11E1

PCB101 VV0123

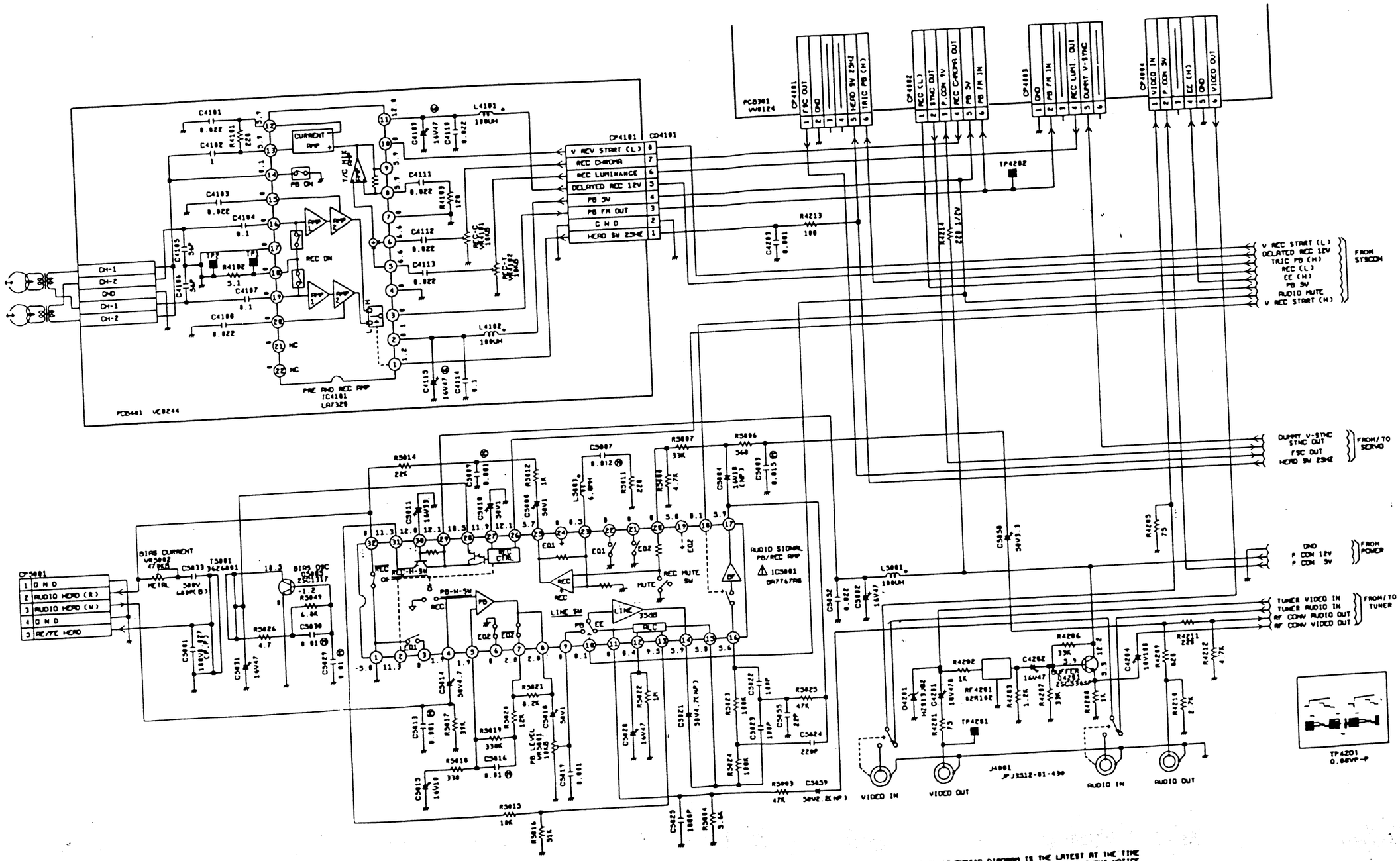
NOTICE: SINCE THESE PARTS MARKED AT ⚠ ARE CRITICAL FOR SAFETY USE ONES DESCRIBED ON PARTS LIST ONLY

ATTENTION: LES PIECES REPEREES PAR UN ⚠ ETANT DANGEREUSES PAR POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

POWER SUPPLY SCHEMATIC DIAGRAM

Y.C./HEAD AMP/AUDIO SCHEMATIC DIAGRAM



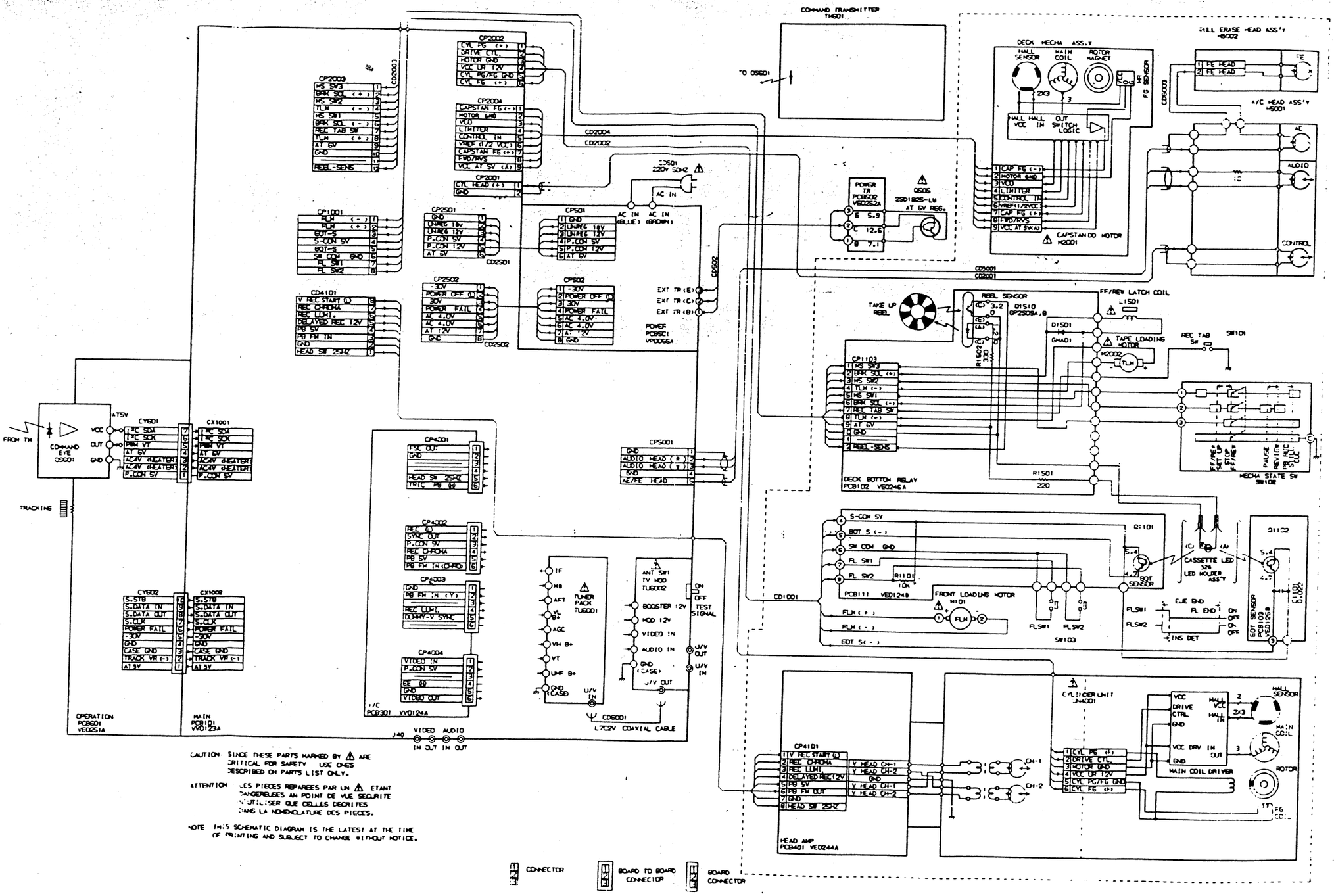
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY

ATTENTION: LES PIECES REPEREES PAR UN ⚠ ETANT DANGEREUSES AU POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

Y.C./HEAD AMP/AUDIO SCHEMATIC DIAGR

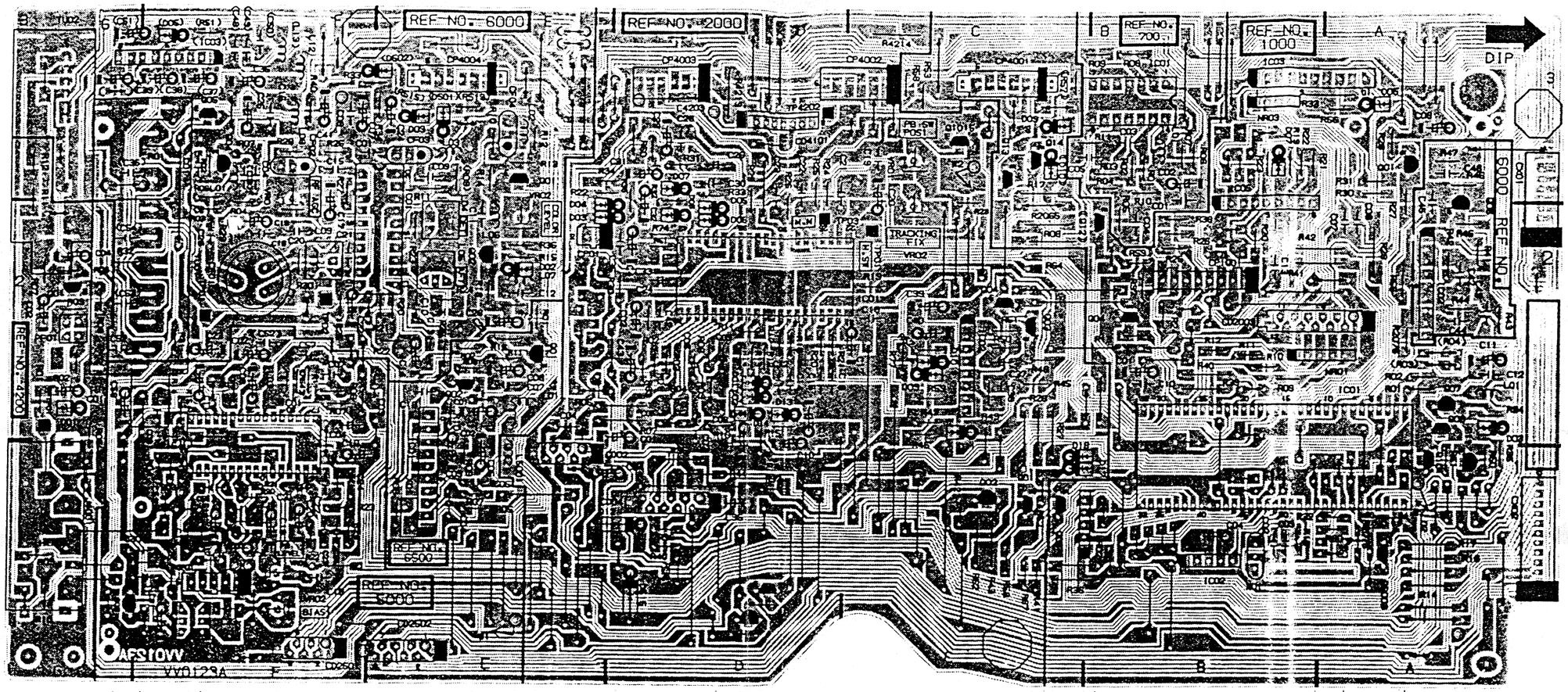
INTERCONNECTION DIAGRAM



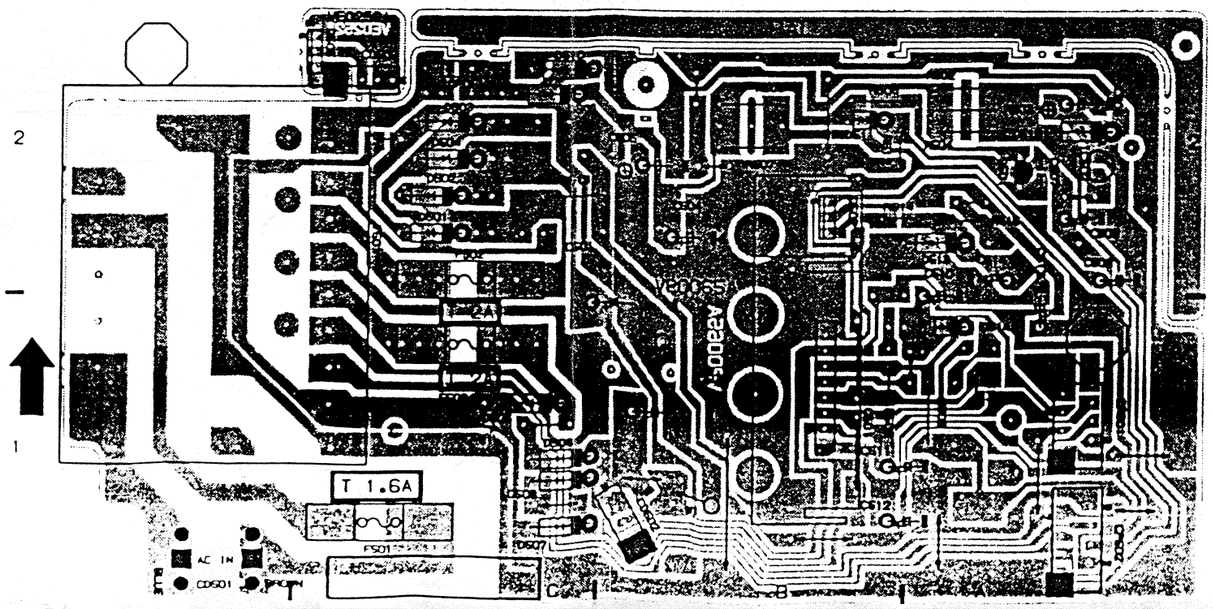
INTERCONNECTION DIAGRAM

1-7185

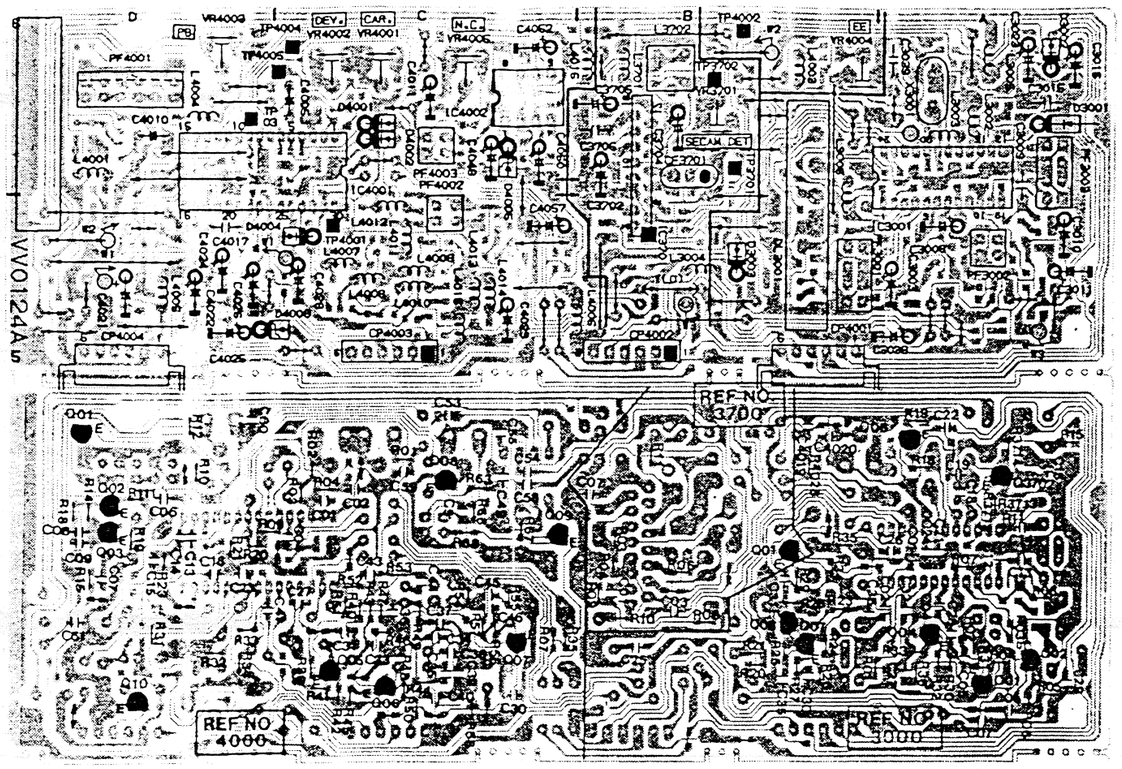
MAIN P.C.BOARD



POWER SUPPLY / TRANSISTOR P.C.BOARD



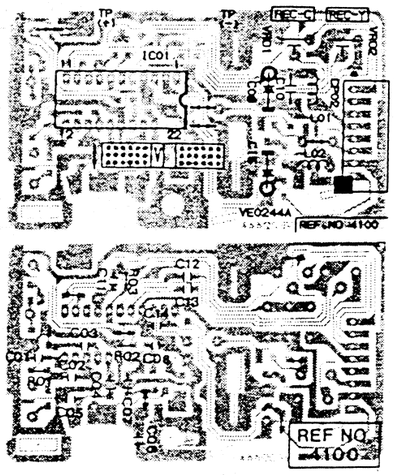
Y.C. P.C.BOARD



COMPONENT SIDE

SOLDER SIDE

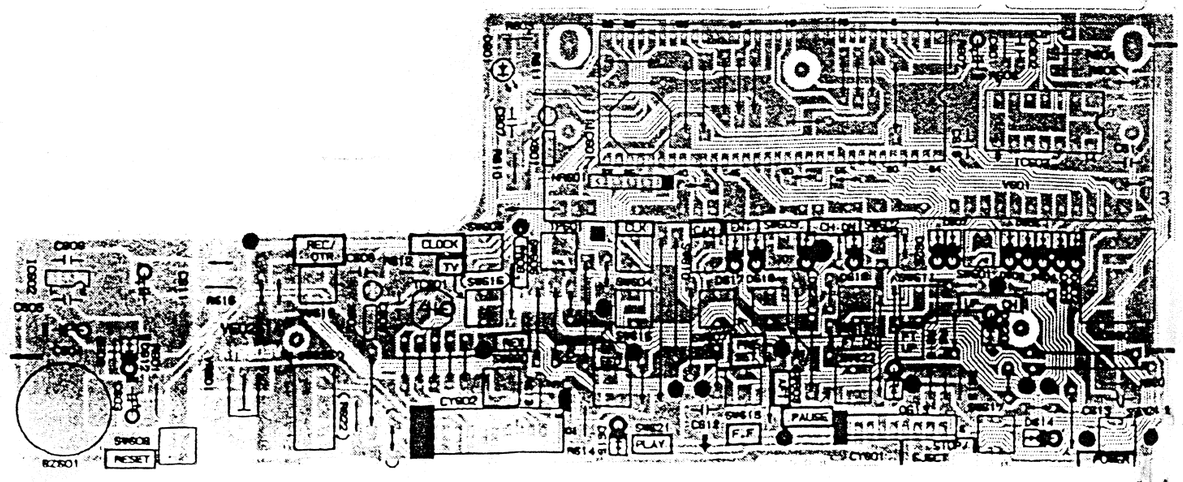
HEAD AMP P.C.BOARD



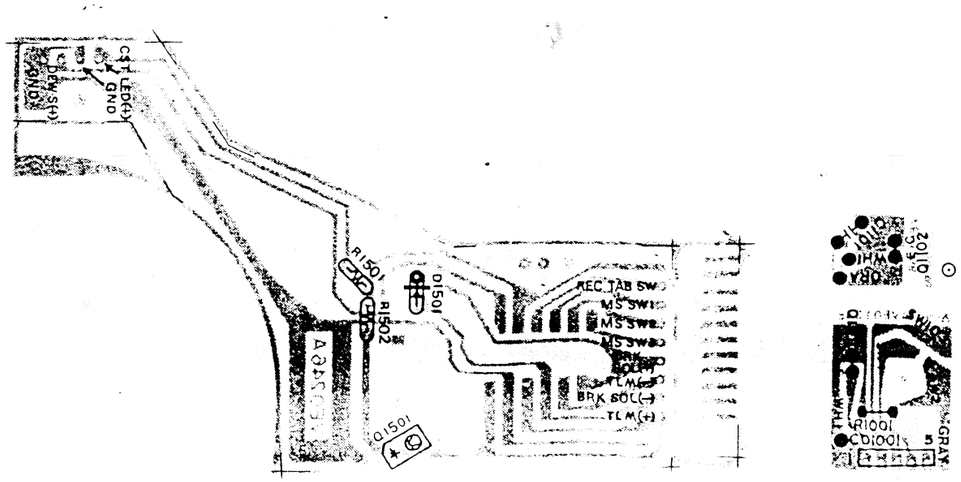
COMPONENT SIDE

SOLDER SIDE

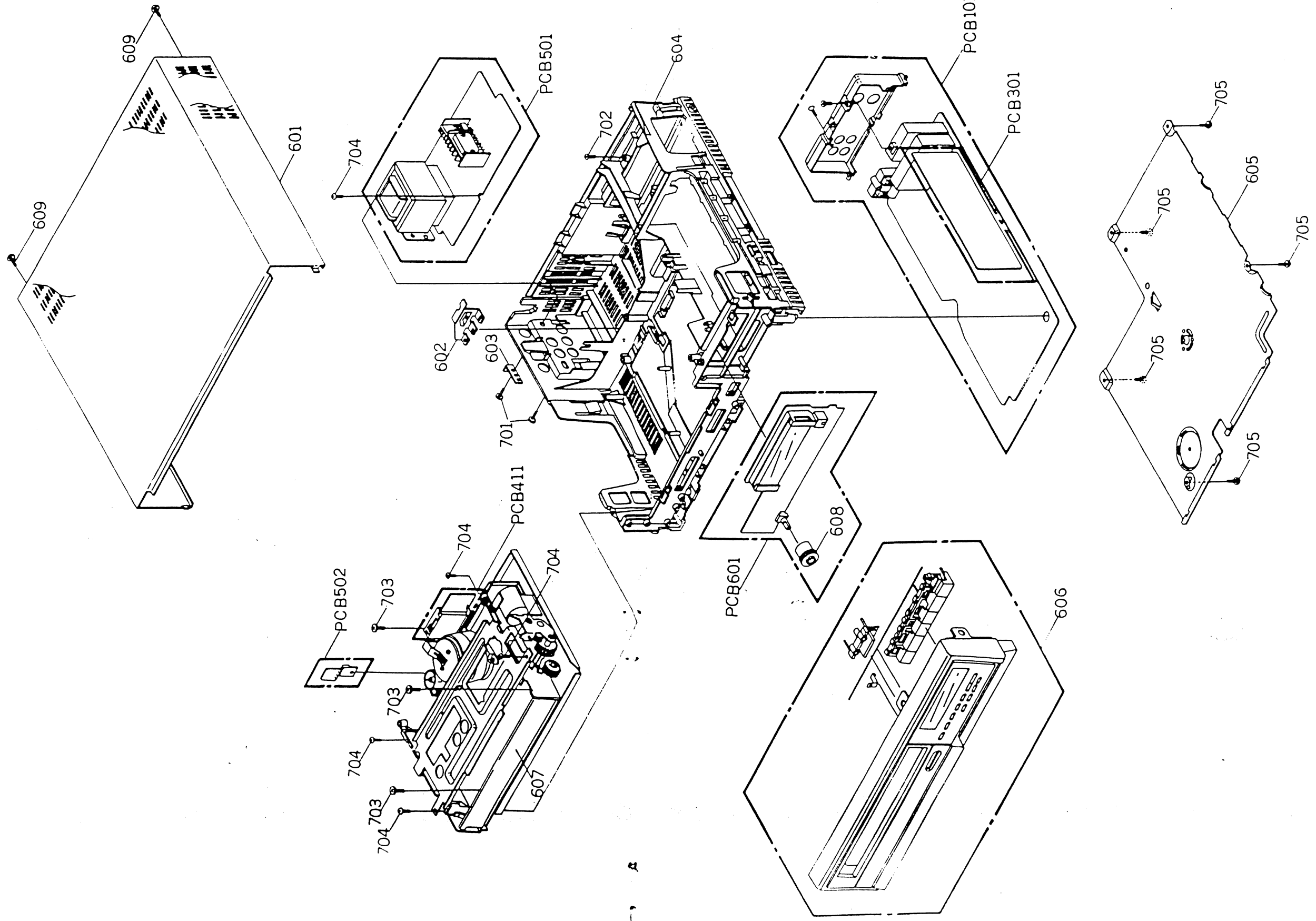
OPERATION P.C.BOARD



DECK P.C.BOARDS



MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW

DECK REPLACEMENT PARTS LIST

REF NO	PART NO	DESCRIPTION	
301	850P500023	SPRING.TR.	
302	850A400056	GUIDE ROLLER ASS'Y	
303	850A400038	INCLINED BASE S ASS'Y	
304	850P600128	FLANGE.P1(A)	
305	850A300021	ARM.LOADING L ASS'Y	
306	850P800083	SPRING.LOADING GEAR L	
307	850P300055	GEAR.LOADING L	
308	850A400047	BASE INCLINED T ASS'Y	
309	850P600113	PULLEY.LOADING MOTOR	
310	850A300022	ARM.LOADING R ASS'Y	
311	850P800084	SPRING.LOADING GEAR R	
312	850P300056	GEAR.LOADING R	
313	850A100006	LOADING BASE ASS'Y	
314	850P800071	SPRING.AZIMUTH	
315	868X0HH804	CONEHEAD SCREW	M3*8 CH
316	868512HA34	JOINT SCREW BIND	M3*13 CH
317	850P600155	BASE AC HEAD	
318	850P800070	SPRING.AC HEAD BASE	
319	850P800077	SPRING.PINCH ROLLER	
320	850A400041	PINCH ROLLER ARM ASS'Y	
321	850A400044	LIMITER POST ARM ASS'Y	
322	850P800092	SPRING.LIMITER POST 2	
323	850P500010	ADJUST NUT	
324	850P600139	POST.SLEEVE 2	
325	850P800076	SPRING.P4	
326	850A700003	LED HOLDER ASS'Y	
327	850A600049	TB BRAKE ARM ASS'Y	
328	850A200007	REEL DISK T ASS'Y	
329	850P800079	SPRING.SS BRAKE	
330	850A600037	SS BRAKE ARM ASS'Y	
331	850P800081	SPRING.TENSION LEVER 2	
332	850A600047	TENSION LEVER 2 ASS'Y	
333	850A200004	IDLER ASS'Y	
334	850A200006	REEL DISK S ASS'Y	
335	850A600041	MAIN BRAKE ARM L ASS'Y	
336	850A600042	MAIN BRAKE ARM R ASS'Y	
337	850P800074	SPRING.MAIN BRAKE	
338	850A600044	MB CONNECT ASS'Y	
339	850P800117	SPRING.TS BRAKE 3	
340	850A600056	TS BRAKE ARM 2 ASS'Y	
341	850P600130	POST.SLEEVE P1	
342	850P800075	SPRING.P1	
343	850P800072	SPRING.FE HEAD ARM	
344	850A600057	TENSION BAND ASS'Y	
345	850P800080	SPRING.TENSION ARM	
346	850A400046	TENSION ARM ASS'Y	
347	850A500004	FE HEAD ARM ASS'Y	
348	850PL03120	PLATE.ADJUST TENSION	
349	850P000097	FRAME.DECK BACK 2	
350	850P600142	ACTUATOR.PINCH ROLLER	
351	850P800078	SPRING.PR ACTUATOR	
352	850A000007	MAIN CHASSIS ASS'Y	
353	850A600046	WORM ASS'Y	
354	850P600125	BELT.LOADING MOTOR	
355	850P600141	MAIN CAM	
356	850A600048	TENSION LEVER 1 ASS'Y	
357	850A300020	FAN SHAPED GEAR ASS'Y	
358	850P600196	PLATE.FS GEAR 2	
359	850A200005	CLUTCH ASS'Y	
360	850A600053	MB.LEVER 2 ASS'Y	
361	850A600050	CA 2 LEVER ASS'Y	
362	850A600036	ACTUATOR ASS'Y	
363	850A600039	LIMITER POST LEVER ASS'Y	
364	850P300059	GEAR.M	
365	850P600129	FLANGE.P1(B)	
366	868491H734	TAP TITE(S) PAN SPW*W7 3*7 CH	
367	850P600122	NUT.ADJUST X	
368	850P600124	BELT.REEL	
369	850P000098	FRAME.RIGHT SIDE 2	
370	868501H804	TAP TITE(S) PAN #6	3*8 CH
371	850P600111	HOLDER.PHOTO COUPLER	
372	850PAA0063	SHIELD.LID	
373	850PAA0064	SHIELD.CASE	
401	850P900258	SPRING.REMOVING	
402	850P900256	BRACKET TOP	
403	850P900261	SPRING.LINK GEAR L	
404	850P900246	LINK GEAR L	
405	850P900238	GEAR.SYNCHRO	
406	850A900047	CASS.SIDE L ASS'Y	
407	850P900267	SHAFT.SYNCHRO	
408	850P900240	OPENER	
409	850P900263	SPRING.OPENER	
410	850A900055	CASS.SIDE R ASS'Y	
411	850P900241	FLAP OPENER	
412	850P900259	SPRING.FLAP OPENER	
413	850P900247	LINK GEAR R	
414	850P900260	SPRING.CLUTCH	
415	850P900262	SPRING.LINK GEAR R	
416	850P900243	WORM WHEEL	
417	788JKE0005	TAP TITE(P) PAN W7.5	2.6*10 UC
418	850P900239	LEVER CAM	
419	850A900045	BRACKET.MOTOR ASS'Y	
420	850P900245	WORM	
421	850P900251	BRACKET.SIDE L	
422	850P900252	BRACKET.SIDE R	
423	850A900044	CASS.HOLDER SUB ASS'Y	
424	850P900244	CLUTCH GEAR	
425	850P900257	SPRING CASS.HOLDER	
427	850P900248	TAPE GUIDE PIECE	
428	850P900273	SPRING.LEVER CAM (A)	
429	850P900217	WORM DRIVER	
430	850P900264	SPRING.LOCKER R	
431	850P900242	REMOVING	
432	850P900229	BUSH RUBBER	
501	8680220404	BIND	M2*4 CH
502	8680K1G604	SEMS K	M2.6*6 CH
503	868WQ2647N	POLYSLIDER WASHER(CUT)	2.6*4.7*TO 4
504	868WQ3154N	POLYSLIDER WASHER(CUT)	3.1*5.4*TO.4
505	868072H604	TAP TITE(S) BIND	3*6 CH
506	868072H804	TAP TITE(S) BIND	3*8 CH
507	868072HA04	TAP TITE(S) BIND	3*10 CH
508	868072HA44	TAP TITE(S) BIND	3*14 CH
509	868073H604	TAP TITE(S) FLAT	3*6 CH
510	8685DZD302	SET SCREW 6CUP POINT	M2*3 BK
511	868102H804	TAP TITE(P) BIND	3*8 CH
512	868072HA64	TAP TITE(S) BIND	3*16 CH
513	868WP6290U	POLYSLIDER WASHER	6.2*9.0*TO 8
514	868NETW251	E-RING	2.5
515	868NETW301	E-RING	3.0
516	868N006304	NYLON NUT	M3
517	868N007304	NYLON NUT	M3
518	868WA32A0U	WASHER	3.2*10*TO.5
519	868WA4380Q	WASHER	4.3*8.0*TO 5
520	868WP2647E	POLYSLIDER WASHER	2.6*4.7*TO 13
521	868WP3144E	POLYSLIDER WASHER	3.1*4.4*TO 13
522	868WP3147J	POLYSLIDER WASHER	3.1*4.7*TO 25
523	868WP4290Q	POLYSLIDER WASHER	4.2*9.0*TO 5
550	8681O1G604	TAP TITE(P) PAN	2.6*6
551	8680A1H404	SEMS A	M3*4 CH
553	868WP3254J	POLYSLIDER WASHER	3.2*5.4*TO.25
C1101	CH4FF03H4Z	CC RHTP050F223Z-KF	22000 PF 25V
CD1001	068118057A	CORD ElS CONNECTOR	8118057A
CD2001	068N12180A	CORD ElS CONNECTOR	8N12180A
CD5001	06831509 1A	CORD ElS CONNECTOR	8315091A
CD5003	0681121 56A	CORD ElS CONNECTOR	8112156A
CP1103	069R9C0051	CONNECTOR PCB SIDE	52196-1227
D1501	D130GMA010	DIODE,SILICON	GMA-01
H5001	1523D91008	HEAD AUDIO CONTROL	HVMZA1013A
H5002	1543D02002	HEAD.FULL ERASE	HVFMD0009
L1501	02BL000005	ELECTRO MAGNET	JTM1002-01
M101	1596978003	MOTOR.LOADING	MXN13AB11A
M2001	1510998006	CAPSTAN.DD UNIT	DVX-7605R
M2002	1596958006	MOTOR.LOADING	MXN13AB12B
PCB102	A43T01A550	PCB ASS'Y	VE0246A
PCB103	A43T05A680	PCB ASS'Y	VE0125B
PCB111	(A43T05A680)	PCB ASS'Y	VE0124B
Q1101	0000800010	TRANSISTOR PHOTO	PT361
Q1102	0000800010	TRANSISTOR PHOTO	PT361
Q1510	0002G00020	PHOTO COUPLER	GP2S09AB
R1101	R01116103J	RC ERD-16TJ103A	10K OHM 1/6W
R1501	R01106221J	RC ERD-16TJ221	220 OHM 1/6W
R1502	R01106331J	RC ERD-16TJ331	330 OHM 1/6W
SW101	0550111013	SWITCH.LEAF	LSA-1122-13
SW102	0520343002	SWITCH.ROTARY	HMW0423-01-200
SW103	0550A22003	SWITCH.LEAF	MCV00010MPHO
UN4001	1590100010	UNIT.CYLINDER	1590100010

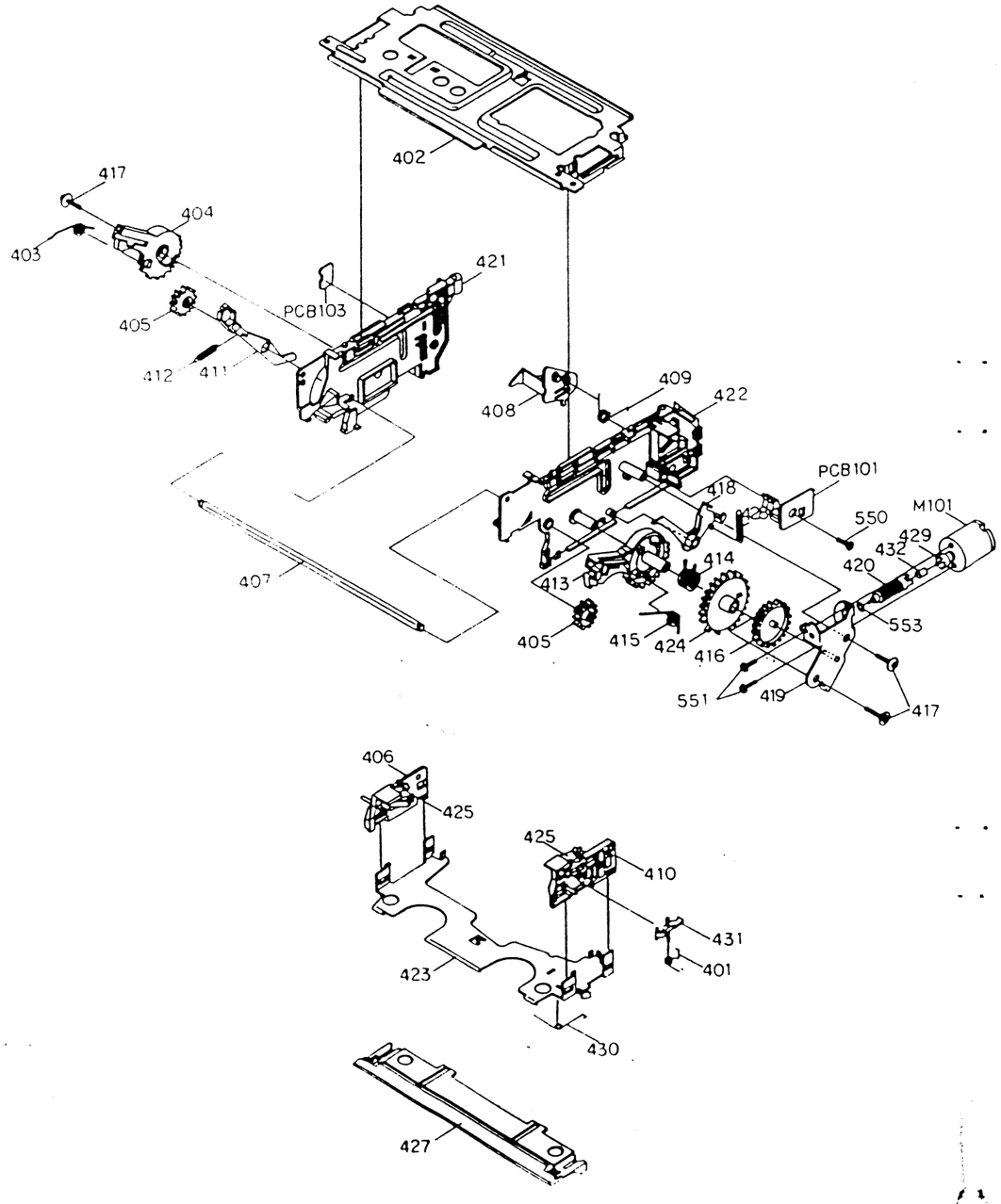
THIS ELECTRICAL PARTS LIST IS A STANDARD PART LIST. BUT
INTERCHANGEABLE PARTS MAY BE USED IN THE UNIT.
SEE THE INTERCHANGEABLE PARTS LIST AFTER THE STANDARD PARTS LIST

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION	
		-RESISTORS-	
R611	R06104106J	RC	10M OHM 1/4W
R1063	R01106102J	RC	1K OHM 1/6W
		-CAPACITORS-	
C501	E011F3332M	CE	3300 UF 25V
C502	E011F3222M	CE	2200 UF 25V
C605	P613004 73J	CWPL	0.047 UF 50V
C611	E59A0P473Z	CE	0.047 UF 5.5V
C1010	C010F04Q4Z	CC	0.047 UF 50V F
C2044	P111001 53J	CP	0.015 UF 50V
C2045	CH10F03H4Z	CC	22000 PF 25V ZF
C3040	CH40Y0214M	CC	10000 PF 16V
		-SEMICONDUCTORS-	
Δ D501	D23TDSF10T	DIODE.RECTIFIER	DSF10TB-BT-A
Δ D502	D23TDSF10T	DIODE.RECTIFIER	DSF10TB-BT-A
Δ D503	D23TDSF10T	DIODE.RECTIFIER	DSF10TB-BT-A
Δ D504	D23TDSF10T	DIODE.RECTIFIER	DSF10TB-BT-A
Δ D505	D23TDSF10T	DIODE.RECTIFIER	DSF10TB-BT-A
Δ D506	D23TDSF10T	DIODE.RECTIFIER	DSF10TB-BT-A
Δ D507	D23TDSF10T	DIODE.RECTIFIER	DSF10TB-BT-A
Δ D508	D23TDSF10T	DIODE.RECTIFIER	DSF10TB-BT-A
D509	D28T011E20	DIODE.SILICON	11E2TA1
D510	D28T011E20	DIODE.SILICON	11E2TA1
Δ D511	DB7T2MR150	GLASS SEALED LED	LTZ-MR15-T77
D512	D930130018	DIODE.ZENER	GZB30B
D513	D93T01300Z	DIODE.ZENER	GZA13 Z BT
D514	D1TT001320	DIODE.SILICON	1SS132T-77
D515	D28T011E10	DIODE.SILICON	11E1TA1-T
Δ D516	D13TDS442X	DIODE.SILICON	DS442X-BT
Δ D517	D13TDS442X	DIODE.SILICON	DS442X-BT
D601	00211210 50	LED	LN81RCPH-(C)
D602	D1TT001320	DIODE.SILICON	1SS132T-77
D603	D1TT001320	DIODE.SILICON	1SS132T-77
D604	D1TT001320	DIODE.SILICON	1SS132T-77
D605	D1TT001320	DIODE.SILICON	1SS132T-77
D606	D1TT001320	DIODE.SILICON	1SS132T-77
D607	D1TT001320	DIODE.SILICON	1SS132T-77
D612	D1TT001320	DIODE.SILICON	1SS132T-77
D613	D94UA6R2J2	DIODE.ZENER	HZS6R2JB2-T
D614	D1TT001320	DIODE.SILICON	1SS132T-77
D615	D1TT001320	DIODE.SILICON	1SS132T-77
D617	D1TT001320	DIODE.SILICON	1SS132T-77
D620	D1TT001320	DIODE.SILICON	1SS132T-77
D1003	D13TGMA010	DIODE.SILICON	GMA-01-BT
D1005	D94TA110J3	DIODE.ZENER	HZS11JB3-TE
D1007	D13TGMA010	DIODE.SILICON	GMA-01-BT
D1009	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2001	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2002	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2003	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2004	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2005	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2006	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2007	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2008	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2009	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2010	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2011	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2012	D28T011E10	DIODE.SILICON	11E1TA1-T
D2013	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2014	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2017	D13TGMA010	DIODE.SILICON	GMA-01-BT
D2018	D13TGMA010	DIODE.SILICON	GMA-01-BT
D3001	D13TDS442X	DIODE.SILICON	DS442X-BT
D3004	D1T0001320	DIODE.SILICON	1SS132
D4001	D1TT001320	DIODE.SILICON	1SS132T-77
D4002	D1TT001320	DIODE.SILICON	1SS132T-77
D4005	D94TA9R1J2	DIODE.ZENER	HZS9R1JB2-TE
D4008	D94TA6R8J2	DIODE.ZENER	HZS6R8JB2-TE
D4201	D94TA130J2	DIODE.ZENER	HZS13JB2-TE
D6002	D14U001660	DIODE.SILICON	1SS166-03TE
D6003	D13TGMA010	DIODE.SILICON	GMA-01-BT
D6005	D13TGMA010	DIODE.SILICON	GMA-01-BT
D6501	D13TGMA010	DIODE.SILICON	GMA-01-BT
D6502	D13TGMA010	DIODE.SILICON	GMA-01-BT
Δ IC501	123S953420	IC	STK5342
Δ IC502	102190574J	IC	UPC574J-T
IC601	156DT7005A	IC	OEC7005

REF.NO	PART NO	DESCRIPTION	
		-SEMICONDUCTORS (CONT)-	
IC602	101901280M	IC	MN1280
IC603	156D066300	IC	M58630P
IC1001	154D500158	IC	OEC00158
IC1002	106S51954A	IC	M51954AL
IC1003	107S062470	IC	BA6247
IC1005	103S063930	IC	LA6393S
IC2001	197D49009A	IC	OEC9009
IC2002	107S010358	IC	BA10358N
IC3001	103D373300	IC	LA7330
IC3701	107TC7025L	IC	BA7025L
IC4001	103D37323A	IC	LA7323A
IC4002	106D369653	IC	MSM6965-3RS
IC4101	103DG73200	IC	LA7320
Δ IC5001	107D767AS0	IC	BA7767AS
IC6001	103DA7530N	IC	LA7530N
IC6002	103S06358T	IC	LA6358ST
IC6003	103S079100	IC	LA7910
IC6501	103S072100	IC	LA7210
Δ Q501	TA3T0984K0	TRANSISTOR.SILICON	2SA984K-T
Δ Q502	TD70019330	TRANSISTOR.SILICON	2SD1933
Δ Q505	TD3H018250	TRANSISTOR.SILICON	2SD1825-LU
Q601	TN7TB03001	COMPOUND.TRANSISTOR	DTC114E S-T
Δ Q1001	TD3TO11110	TRANSISTOR.SILICON	2SD1111-T
Q1004	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
Q1005	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
Q1006	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
Δ Q1007	TC3T022740	TRANSISTOR.SILICON	2SC2274
Q1010	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
Q1011	TB3T006980	TRANSISTOR.SILICON	2SB698-AA
Q1013	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
Q1014	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
Q1015	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
Q2001	TC3T0536S0	TRANSISTOR.SILICON	2SC536SP-AC
Q2002	TB3T009260	TRANSISTOR.SILICON	2SB926-T
Q2003	TP3T006001	COMPOUND.TRANSISTOR	2SA1345
Q2004	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
Q3001	T67A1037K0	TRANSISTOR.SILICON	2SA1037KT97
Q3002	T87A02412K	TRANSISTOR.SILICON	2SC2412K
Q3004	T87A02412K	TRANSISTOR.SILICON	2SC2412K
Q3006	T87A02412K	TRANSISTOR.SILICON	2SC2412K
Q3007	T87A02412K	TRANSISTOR.SILICON	2SC2412K
Q3008	T87A02412K	TRANSISTOR.SILICON	2SC2412K
Q3701	TN7TC05001	COMPOUND.TRANSISTOR	DTC124EKTP
Q3702	T87A02412K	TRANSISTOR.SILICON	2SC2412K
Q4001	T67A1037K0	TRANSISTOR.SILICON	2SA1037KT97
Q4002	T83A028127	TRANSISTOR.SILICON	2SC2812-L7-TA
Q4003	T83A028127	TRANSISTOR.SILICON	2SC2812-L7-TA
Q4005	T83A028127	TRANSISTOR.SILICON	2SC2812-L7-TA
Q4006	T83A028127	TRANSISTOR.SILICON	2SC2812-L7-TA
Q4007	T87A02412K	TRANSISTOR.SILICON	2SC2412K
Q4008	T67A1037K0	TRANSISTOR.SILICON	2SA1037KT97
Q4009	T87A02412K	TRANSISTOR.SILICON	2SC2412K
Q4010	TN7TC05001	COMPOUND.TRANSISTOR	DTC124EKTP
Q4201	TC3T0536S0	TRANSISTOR.SILICON	2SC536SP-AC
Q5005	TC1T01317O	TRANSISTOR.SILICON	2SC1317-T
Q6001	TC3T0536S0	TRANSISTOR.SILICON	2SC536SP-AC
Q6002	TA3T0608K0	TRANSISTOR.SILICON	2SA608KNP-T
Q6003	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
Q6004	TC3T030000	TRANSISTOR.SILICON	2SC3000-AA
Q6005	TC3T0536S0	TRANSISTOR.SILICON	2SC536SP-AC
Q6006	TC3T0536K0	TRANSISTOR.SILICON	2SC536KNP-AA
Q6501	TC3T0536K0	TRANSISTOR.SILICON	2SC536KNP-AA
Q6502	TN3TC03001	COMPOUND.TRANSISTOR	2SC3400-T
		- COILS & TRANSFORMERS-	
L1001	021B73101K	COIL FLR50T50A-101K	100 UH
L1002	021B73101K	COIL FLR50T50A-101K	100 UH
L3002	021JA6180K	COIL LAL02TA180K	18 UH
L3003	021JA63R3K	COIL LAL02TA3R3K	3.3 UH
L3004	021JA6101K	COIL LAL02TA101K	100 UH
L3005	021B73101K	COIL FLR50T50A-101K	100 UH
L3006	021JA6150K	COIL LAL02TA150K	15 UH
L3701	021B73101K	COIL FLR50T50A-101K	100 UH
L3702	0326220011	COIL.TRAP	2622001
L4001	021JA6151K	COIL LAL02TA151K	150 UH
L4003	021JA6470K	COIL LAL02TA470K	47 UH
L4004	021JA61R0M	COIL LAL02TA1R0M	1.0 UH
L4005	021B73101K	COIL FLR50T50A-101K	100 UH
L4006	021B73101K	COIL FLR50T50A-101K	100 UH
L4007	021JA6330K	COIL LAL02TA330K	33 UH
L4009	021JA6151K	COIL LAL02TA151K	150 UH
L4010	021JA6220K	COIL LAL02TA220K	22 UH
L4011	021JA6100K	COIL LAL02TA100K	10 UH
L4012	021JA6390K	COIL LAL02TA390K	39 UH

DECK EXPLODED VIEW
(FL-5)(A43701A650)



MECHANICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION	
601	702JSB0004	CABINET.TOP	
602	753JSA0021	PLATE.DECK EARTH	
603	753JSA0014	PLATE.TRANS EARTH	
604	702JPA0327	CABINET.INSIDE SHEET.RATING	
605	702JSA0019	CABINET.BOTTOM	
606	A43704A723	CABINET.FRONT ASS'Y	
607	7230002442	FLAP	
608	731JPA0042	KNOB.TRACKING	
609	788JSE0014	TAPPING(BO) TRUSS	4*12 BK
701	8102240804	BIND	M4*8 CH
702	8110630A44	TAP TITE(P) BRAZIER	3*14 CH
703	8117240A24	TAPPING(BO) BIND	4*12 CH
704	8117630A04	TAPPING(BO) BRAZIER	3*10 CH
705	8110630804	TAP TITE(P) BRAZIER	3*8 CH
---	J1ACVAA02B	GUARANTEE CARD	
---	J1ACVAA28C	WARNING SHEET	
---	J1ACVYA20A	CAUTION SHEET	
---	J4370401A	INSTRUCTION BOOK	
---	J4370407A	QUICK SET-UP SHEET	
---	791JHA0082	GIFT SHEET	
---	792JHA0171	PACKAGE	
---	793JCD1945	GIFT BOX	

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION
		-COILS & TRANSFORMERS (CONT)-
L4013	021JA6150K	COIL LAL02TA150K 15 UH
L4014	021JA6121K	COIL LAL02TA121K 120 UH
L4015	021JA6270K	COIL LAL02TA270K 27 UH
L4016	021B73101K	COIL FLR50T50A-101K 100 UH
L4101	021B73101K	COIL FLR50T50A-101K 100 UH
L4102	021B73101K	COIL FLR50T50A-101K 100 UH
L5001	021B73101K	COIL FLR50T50A-101K 100 UH
L5003	021J74682J	COIL LHL06TB682J 6.8 MH
L6001	021JA6R82M	COIL LAL02TAR82M 0.82 UH
L6002	021JA6100K	COIL LAL02TA100K 10 UH
L6003	021JA6100K	COIL LAL02TA100K 10 UH
L6004	0336000137	COIL.VIDEO IFT 3600013
L6005	033600M107	COIL.VIDEO IFT 3600010(F370A)
L6006	021JA6270K	COIL LAL02TA270K 27 UH
L6007	021JA65R6K	COIL LAL02TA5R6K 5.6 UH
L6008	021B73101K	COIL FLR50T50A-101K 100 UH
L6009	0336000057	COIL.VIDEO IFT 3600005(E693X)
L6012	021B73101K	COIL FLR50T50A-101K 100 UH
L6013	021B73101K	COIL FLR50T50A-101K 100 UH
L6501	021B73101K	COIL FLR50T50A-101K 100 UH
⚠ T501	0405570183	TRANSFORMER.POWER AC 0557018
T5001	033626M018	COIL.BIAS OSC 3626001
		-JACK-
J4001	0632000024	JACK.PLATE JPJ3512-01-430
		-SWITCHES-
SW601	0504201T11	SWITCH TACT SKHVAD
SW602	0504201T11	SWITCH TACT SKHVAD
SW603	0504201T11	SWITCH TACT SKHVAD
SW604	0504201T11	SWITCH TACT SKHVAD
SW605	0504201T11	SWITCH TACT SKHVAD
SW606	0504201T11	SWITCH TACT SKHVAD
SW607	0504201T11	SWITCH TACT SKHVAD
SW608	0504201T11	SWITCH TACT SKHVAD
SW609	0504201T11	SWITCH TACT SKHVAD
SW610	0504201T11	SWITCH TACT SKHVAD
SW611	0504201T11	SWITCH TACT SKHVAD
SW612	0504201T11	SWITCH TACT SKHVAD
SW617	0504201T11	SWITCH TACT SKHVAD
SW618	0504201T11	SWITCH TACT SKHVAD
SW619	0504201T11	SWITCH TACT SKHVAD
SW620	0504201T11	SWITCH TACT SKHVAD
SW621	0504201T11	SWITCH TACT SKHVAD
SW622	0504201T11	SWITCH TACT SKHVAD
SW624	0504201T11	SWITCH TACT SKHVAD
		-VARIABLE RESISTORS-
VR601	V014025B06	VR.ROTARY EVU-F3A F25 B25
VR2001	V1263Q5BT1	VR.SEMIFIXED RH0634CS5R
VR2002	V126315BT1	VR.SEMIFIXED RH0634C15R
VR3701	V126313BT1	VR.SEMIFIXED RH0634C13R
VR4001	V1263H4BT1	VR.SEMIFIXED RH0634CJ4R
VR4002	V126314BT1	VR.SEMIFIXED RH0634C14R
VR4003	V1263L3BT1	VR.SEMIFIXED RH0634CN3R
VR4004	V126314BT1	VR.SEMIFIXED RH0634C14R
VR4005	V126314BT1	VR.SEMIFIXED RH0634C14R
VR4101	V126214BT1	VR.SEMIFIXED RH0632C14R
VR4102	V126214BT1	VR.SEMIFIXED RH0632C14R
VR5001	V126314BT1	VR.SEMIFIXED RH0634C14R
VR5002	V1263Q5B03	VR.SEMIFIXED RH0624CS5J
VR6001	V126314BT1	VR.SEMIFIXED RH0634C14R
VR6002	V126314BT1	VR.SEMIFIXED RH0634C14R
		-P.C. BOARDS ASS'Y-
PCB101	A43704A010	PCB ASS'Y VV0123A
PCB301	A43704A300	PCB ASS'Y VV0124A
PCB401	A43708A330	PCB ASS'Y VE0244A
PCB501	A43704A020	PCB ASS'Y VP0065A
PCB502	(A43704A020)	PCB ASS'Y VE0252A
PCB601	A43704A270	PCB ASS'Y VE0251A
		-MISCELLANEOUS-
BT601	1412004001	BATTERY.MANGAN UM-4(SP)
⚠ CD501	1204450022	CORD AC E2N 7FEET
CD502	1227031203	CORD JUMPER 27031203
CP501	069R960019	CONNECTOR PCB SIDE 52004-0610
CP502	069R980019	CONNECTOR PCB SIDE 52004-0810
CY601	0694270060	CONNECTOR PCB SIDE 173991-7
CY602	06942A0060	CONNECTOR PCB SIDE 1-173991-0
CD2002	1227062002	CORD JUMPER 27062002
CD2003	12270C1503	CORD JUMPER 270C1503
CD2004	1227091201	CORD JUMPER 27091201

REF.NO	PART NO	DESCRIPTION
		-MISCELLANEOUS (CONT)-
CD2501	1227069001	CORD JUMPER 27069001
CD2502	1227089001	CORD JUMPER 27089001
CD4101	068328007A	CORD EIS CONNECTOR 8328007A
CD6001	0682H06001	CORD COAXIAL 82H06001
CD6002	0680L05004	CABLE.PAL PDS05-DP05-3C1.5
CF3701	10114R1703	FILTER.CERAMIC EFCS4R17MS4A
CF6001	1027038R91	FILTER.SAW F1034
CF6002	1012T5R501	FILTER.CERAMIC CDA5.5MC26-TF20
CF6003	1012T5R502	FILTER.CERAMIC SFE5.5MB-TF20
CF6004	1012T5R503	FILTER.CERAMIC TRAP TPS5.5MB-TF20
CP1001	0694180060	CONNECTOR PCB SIDE 172681-6 UX-V
CP2001	0694120060	CONNECTOR PCB SIDE 172681-2
CP2002	069R960029	CONNECTOR PCB SIDE 51016-0600
CP2003	069R9C0029	CONNECTOR PCB SIDE 51016-1200
CP2004	069R990029	CONNECTOR PCB SIDE 51016-0900
CP2501	069R960029	CONNECTOR PCB SIDE 51016-0600
CP2502	069R980029	CONNECTOR PCB SIDE 51016-0800
CP4001	069Q160179	CONNECTOR PCB SIDE CPB1806-0101
CP4002	0697160189	CONNECTOR PCB SIDE TXX-H06P-G1
CP4003	0697160189	CONNECTOR PCB SIDE TXX-H06P-G1
CP4004	069Q160179	CONNECTOR PCB SIDE CPB1806-0101
CP4101	069R280189	CONNECTOR PCB SIDE 53015-0810
CP5001	0694150060	CONNECTOR PCB SIDE 172681-5 UX-V
CX1001	0694270070	CONNECTOR PCB SIDE 173992-7
CX1002	06942A0070	CONNECTOR PCB SIDE 1-173992-0
DL3001	104A24R436	DELAY LINE GLASS ADL-SE2244R
⚠ F501	080ET1R601	FUSE BET1.6 A(T)250V
⚠ F502	080ET02001	FUSE BET 2A(T)250V
⚠ F503	080ET02001	FUSE BET 2A(T)250V
FH501	067M0T0004	HOLDER.FUSE H0451
FH502	067M0T0005	HOLDER.FUSE H0452
⚠ ICP051	084EF0R301	IC PROTECTOR PRF-315-F003
NR601	110E4223T4	R.NETWORK RN5E5A223J
NR1001	110E4472T2	R.NETWORK RN5E5A472J
NR1002	110E4223T4	R.NETWORK RN5E5A223J
NR1003	110E3223T2	R.NETWORK RN5E4A223J
OS601	0779010002	REMOTE RECEIVER GP-1US41
PF3001	1147L156M5	FILTER.LOW PASS 47L156M5
PF3002	1147B44606	FILTER.BAND PASS 47B44606
PF3003	1147B50604	FILTER.BAND PASS 47B50604
PF4001	1147L30606	FILTER.LOW PASS 47L30606
PF4002	1147H146M5	FILTER.HIGH PASS 47H14605
PF4003	1147L336M4	FILTER.LOW PASS 47L33604
PF4201	103802R102	DELAY 3802R102
TC601	0100614T08	C.CERAMIC TRIMMER VCT51F716A
TM601	0761002003	TRANSMITTER EUR-53579
⚠ TU6001	0145601016	TUNER.UHF-VHF TEME1-003(KA1)
⚠ TU6002	0151101008	RF-CONVERTER ENC-87941
V601	096770R304	TUBE FLUORESCENT DISPLAY FV301G
X601	100EA4R108	CRYSTAL CSA-309
X602	100D32R801	CRYSTAL DT-26S 32.768KHZ
X1001	1002T4R001	CERAMIC.OSCILLATOR CSA4.00MG-TF01
X3001	1006A4R302	CRYSTAL HC-49/U 4.43361875MHZ
X6501	1003R50001	CERAMIC.OSCILLATOR KBR-500AH2

RESISTOR
RC.....CARBON RESISTOR

CAPACITORS
CC.....CERAMIC CAPACITOR
CE.....ALUMI ELECTROLYTIC CAPACITOR
CP.....POLYESTER CAPACITOR
CPP.....POLYPROPYLENE CAPACITOR
CPL.....PLASTIC CAPACITOR
CMP.....METAL POLYESTER CAPACITOR
CMPL.....METAL PLASTIC CAPACITOR
CMPP.....METAL POLYPROPYLENE CAPACITOR
CST.....STYROL CAPACITOR

INTERCHANGEABLE PART LIST

NOTE: THE FOLLOWING PART(S) MAY BE SUBSTITUTED FOR PARTS INDICATED IN THE BASIC PART(S) LIST (WITH THE SAME REF.NO.). THESE PARTS SHARE THE SAME ELECTRICAL CHARACTERISTICS AND OTHER ELEMENTS FOR COMMON USAGE. EITHER PART NUMBER MAY BE USED IN THIS UNIT.

REF.NO	DESCRIPTION (PART NO.)	DESCRIPTION (PART NO.)
Q3001	2SA1037KT97 (T67A1037K0)	2SA1179-TA (T63A011790)
Q3002	2SC2412K (T87A02412K)	2SC2812-TA (T83A028120)
Q3004	2SC2412K (T87A02412K)	2SC2812-TA (T83A028120)
Q3006	2SC2412K (T87A02412K)	2SC2812-TA (T83A028120)
Q3007	2SC2412K (T87A02412K)	2SC2812-TA (T83A028120)
Q3008	2SC2412K (T87A02412K)	2SC2812-TA (T83A028120)
Q3701	DTC124EKTP (TN7TC05001)	2SC3396(CY)-TA (TN3TC05001)
Q3702	2SC2412K (T87A02412K)	2SC2812-TA (T83A028120)
Q4001	2SA1037KT97 (T67A1037K0)	2SC1179-TA (T63A011790)
Q4007	2SC2412K (T87A02412K)	2SC2812-TA (T83A028120)
Q4008	2SA1037KT97 (T67A1037K0)	2SA1179-TA (T63A011790)
Q4009	2SC2412K (T87A02412K)	2SC2812-TA (T83A028120)
Q4010	DTC124EKTP (TN7TC05001)	2SC3396(CY)-TA (TN3TC05001)
BT601	UM-4(SP) (1412004001)	UM-4 (141T004003)
CD502	27031203 (1227031203)	2U031203 (122U031203)
CD2002	27062002 (1227062002)	28062002 (1228062002)
CD2003	270C1503 (12270C1503)	280C1503 (12280C1503)
CD2004	27091201 (1227091201)	28091201 (1228091201)
CD2501	27069001 (1227069001)	28069001 (1228069001)
CD2502	27089001 (1227089001)	28089001 (1228089001)
CD4101	8328007A (068328007A)	8N28007A (068N28007A)